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Answering inquiries and handling customer problems at Ryerson.

True: **Steel is Short—** **But Ryerson Often Solves the Problem**

IN America's vast production effort, there is some man in every company who is responsible for *getting* steel—a man who must get things *done*. In some plants he's called an "expeditor". But whether he is purchasing agent, expeditor, or plant manager, he *must get results*.

Ryerson Steel Service is built to order for his needs! When steel problems become a stone wall, Ryerson usually can come thru with some practical solution. A suitable alternate for steel that's vitally needed, but isn't in stock; a suggestion for heat-treating, machining, welding, or some other way to adapt the steel at hand; rush handling and delivery that will lay the steel down where it's needed, *when* it's needed!

It's nothing new at Ryerson to be cutting corners to help customers solve steel prob-

lems with speed. Ryerson has been doing that for a century—and the experience, the skill and the knowledge of steel and its uses, built up over that hundred years of superlative service, are standing Ryerson and Ryerson customers—in good stead under today's emergency conditions.

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This help in getting things done is available to your organization. Ryerson Steel-Service men are easy to reach; they'll give you prompt consideration. Joseph T. Ryerson & Son, Inc., Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Philadelphia, Buffalo, Boston, Jersey City.

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THE IRON AGE

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OCTOBER 8, 1942

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ESTABLISHED 1855



Keep the Open Hearths Burning

IN halcyon days, there were three kinds of scrap available for steel production: Immediate, from clippings and cuttings made right at the steel mill; short term, produced in our metalworking plants, and long term resulting from obsolescence. Now, of course, with our large shipments of semi-finished and finished steel to our Allies, we lose a tremendous amount of potential scrap. Both short term, from borings and turnings, and long term, which in these times doesn't take so long to be produced.

What this should mean to those men in Washington whose primary function is to expedite the flow of scrap is that they have to find hitherto unreached scrap supplies. It's just the old game of hide and seek. And to win, you can't hug the base, nor the basing point.

The utilization of non-productive, obsolete equipment ought to be a good part of the answer to the scrap shortage. In fact, it is one of our greatest untapped sources. But if that equipment happens to be an old broken-down tractor on a farm in North Dakota, according to our present basing point system, that's the scrap collector's fault, and he is to be penalized to the tune of about two dollars a ton when shipping it to the Chicago basing point.

Now, this two dollars or so a ton extra is something scrap consumers would be willing to pay. It means the difference between getting remote, but essential, scrap or facing lowered operations this winter.

This problem must be licked soon. It has to be our fall offensive before the setting-in of paralyzing winter, as far as scrap collecting and processing is concerned. The easy way to oil the troubled scrap waters would be to switch from a basing point to an f.o.b. basis. That won't make the earth move, but it would certainly make the scrap flow.

Such things are not without precedent.

This f.o.b. aspirin has been administered to foundries, and their cupola cast headache has disappeared.

When Washington, for some obscure reason, wanted to get silver moving into this country, it offered more for that metal than any other buyer. The Metals Reserve Corp. has on occasion paid as much as \$200 a ton for some scrap.

It would certainly be silly to pay \$200 a ton for scrap on one hand, and on the other refuse to try a practical solution to the scrap problem.

But to satisfy those persons who set down principles and then find it painful to change them, this f.o.b. plan could be done as an experiment. If it works, and we're sure it will, then we will be in that much more steel. Present standpattism has cost the nation two to four million tons of steel this year. That ought to be incentive, or indictment, enough to institute a change in pricing policies.

With furnaces in every steel producing area facing a seriously dwindling scrap supply, we cannot afford to coddle a do-nothing attitude on the part of Washington officials. And if the solution is as simple as switching to an f.o.b. system, it should be done without delay.

J. W. Van Dusen

Answers to Some

QUESTIONS ABOUT SCRAP

Q. Why is scrap used to make steel?

A. It conserves natural ore resources, lightens the burden upon the nation's transportation system, and requires less time to convert into molten metal because scrap used by steel mills has previously been refined into steel.

Q. How is scrap used to make steel?

A. It is charged into open hearth furnaces with pig iron and small quantities of special ores and limestone.

Q. Does scrap make good steel?

A. Yes, the finest steel is made from scrap. Electric furnaces, which produce the highest grades of steel including some alloy steels, operate almost entirely upon scrap.

Q. What kind of scrap is needed by the mills?

A. Any iron and steel scrap is usable, except tin-coated or non-ferrous metals which cannot be used to make steel.

Q. How much scrap do steel mills require in a year?

A. In 1941 the total was 45,600,000 tons. Of this amount about half was steel mill scrap and the remainder came from outside sources.

Q. What are the causes of the scrap shortage?

A. Over 20,000,000 tons of scrap were shipped out of this country during the 30's, and never before in the history of the steel industry has there been such a prolonged period of high steel production. All existing accumulations of scrap have been taken and now it is the remote farm, industrial, and household scrap that must be sent to steel mills.

Q. Why not use ore to replace scrap?

A. Ore mining operations, transportation facilities, ore storage space at mills, and blast furnace capacity are based on the use of scrap and cannot be expanded immediately.

Q. Are steel mills doing anything to help the scrap situation?

A. Yes. They are spending millions of dollars to publicize the seriousness of the scrap shortage. They are building new blast furnaces and ore handling facilities. Inland is building one new 1200-ton blast furnace at its own plant and two more for the Government.

Q. Are the scrap dealers doing their part?

A. Scrap dealers did a marvelous job during 1941. In the first six months of 1942, more scrap was moved by the dealers than ever before in history. The need now is for the general public and general business to move their scrap to scrap yards, where it can be properly prepared and rapidly moved to consuming centers.

Q. Why have mills not accumulated scrap?

A. When war came, mills had normal scrap supplies. But, tremendous demand for steel and small scrap offerings quickly lowered mill scrap stocks.

Q. How much scrap do mills have on hand?

A. The supply averages less than two weeks. Many mills are operating on less than two days' supply, which is virtually on the basis of daily receipts.

Q. What would happen if no more scrap reached mills?

A. Within a few days steel output would drop at least 25%—a calamity in view of the desperate need for steel to carry on the war effort.

Q. Why should scrap be gathered now for use next winter?

A. Cold weather, snow and blizzards reduce collection, preparation and transportation of scrap. Mills normally store extra scrap for use in winter. This year—a critical year—mills cannot accumulate scrap for the winter months because it is not available to them.

Q. How can the scrap shortage be solved?

A. By the segregation and return to mills of all production scrap; by executive authority to scrap old buildings, unneeded equipment, obsolete machinery, dormant and excessive stores, unused dies, tools, fixtures, etc.

Q. How can you help?

A. If you are an executive, use your initiative and authority to designate what can be scrapped. If you are an engineer, metallurgist, superintendent, foreman, storekeeper, master-mechanic, millwright, or workman, call to the attention of your management anything and everything that you believe can be spared and sent to the mills as scrap.

Steel mills must have more scrap so that our fighting men will have the equipment they deserve and need!

*Dedicated
to Victory*

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Effects of Notching on Strained Metals

By G. SACHS and J. LUBAHN

Department of Metallurgical Engineering,
Case School of Applied Science,
Cleveland

BRITTLE failures of structural members are frequently ascribed to the presence of a "notch" in the stressed part. This notch may take the form of a groove, thread, hole, sudden section change, or an inclusion in the metal. A considerable amount of research has therefore been carried out on the effect of notches on the behavior of steels and other materials subjected to static tension.

However, it appears that the interpretation of the experimental results which are at present available is rather inconclusive and open to argument. Also, the experimental relations appear frequently to be improperly described and are subject to theoretically assumed conclusions, the validity of which cannot be proved or disproved within the limits of error.

Notched bars subjected to elastic strain are much more highly stressed and strained in the vicinity of the notch than in other parts. This stress concentration should result in a decrease of strength. However, such a loss of strength due to notching has definitely been established only in the case of the endurance limit but it is smaller for the more ductile metals.

On the contrary, it has been observed at an early stage of the scientific testing of metals (Kirkaldy, 1892) that the tensile strength of a steel is increased in a section adjacent to larger sections. This has been attributed to the restriction of the lateral, or transverse, flow by the sudden section change, or notch. The

... A correlated abstract intended to clarify the experimental evidence on notches as they affect the behavior of metals in static tension. The authors show that results to date present inconclusive evidence which is often improperly described and related.

interest in this notch effect in tensile test bars has been particularly strong since 1923 when Ludwik and Scheu^{2,3} published a few experiments on soft steel tensile test bars provided with notches of various types, Fig. 1. Their measurements of the stresses and strains during testing resulted in stress-strain curves of the conventional type, Fig. 2, and also in diagrams showing the average actual stress, or so-called true stress, in the notched section as a function of the average local strain, or "effective strain" (in logarithmic scale), Fig. 3. The conclusion was drawn from these tests that increasing sharpness of notching, produced in these experiments by reducing the length of the notched section and the angle of the notch, causes the following changes in the properties of the metal: (a) The average ultimate strength and yield strength of a ductile metal are gradually increased by notching up to a value at least 60 per cent greater for a very sharp notch, than the respective properties of an unnotched specimen. (b) There is a corresponding decrease in the ductility, as measured by the local contraction

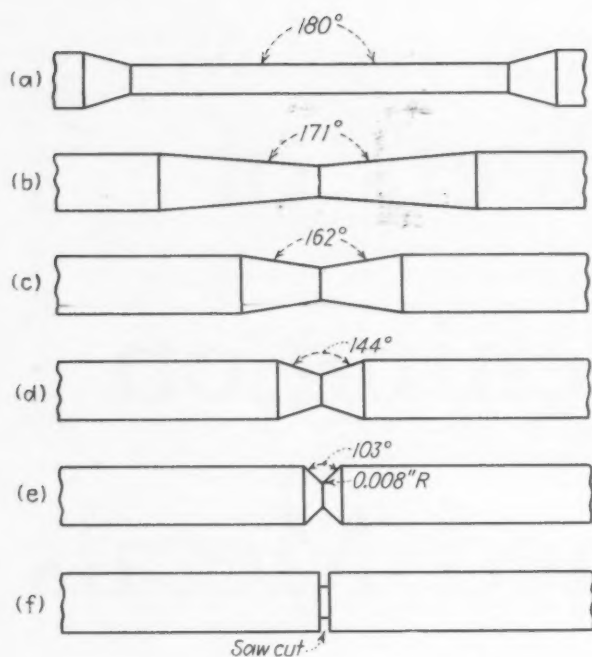
in area of the smallest section. These changes were correlated with the presence of transverse stresses, the magnitude of which increases with the sharpness of the notch. The transverse stresses restrain the deformation; and in the limiting condition of equal magnitude in all three directions, frequently referred to as triaxial (or hydrostatic) tension, any metal should behave in a brittle manner.

Kuntze's Experiments

Extensive investigations on notched tensile test bars of various metals and alloys have been carried out by Kuntze,⁴⁻¹¹ who also perfected the experimental technique of this test.^{6,9} Kuntze attempted to show that any metal approaches the state of hydrostatic tension in the notched section if the notch is sufficiently sharp and deep.

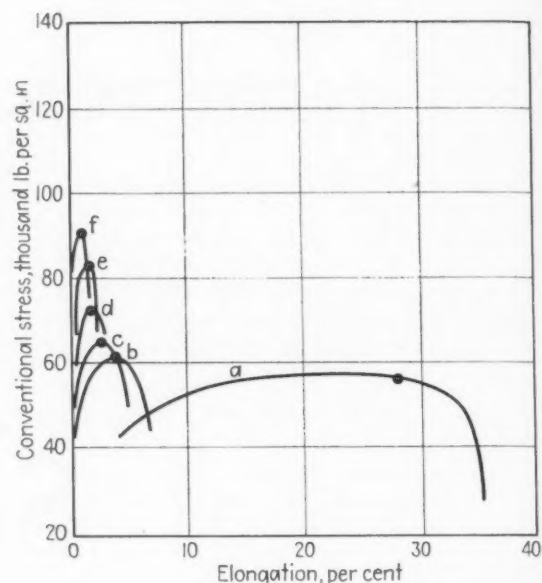
Evaluating Ludwik and Scheu's experiments, according to Fig. 4, Kuntze first plotted the various stress values derived from the test, the average ultimate strength* or notch strength (Fig. 2), the

* i.e., the maximum load divided by the area of the notched section.



LEFT
FIG. 1—Types of notched steel tensile test bars investigated by Ludwik.

RIGHT
FIG. 2—Conventional stress-strain curves produced by the bars shown in Fig. 1



“actual” stress at maximum load, and the actual fracture stress (Fig. 3), against the contraction in area, or ductility, Fig. 4a. The conclusion is drawn that all three curves extrapolate to a common stress value, the cohesive strength, for a ductility of zero. Although such an extrapolation would appear to be logical, the data points of Fig. 4a do not justify it. From the data represented here, it seems more likely that the actual maximum load stress curve is parallel to the notch strength curve rather than as shown in Fig. 4a, and that it intersects the fracture stress curve at a ductility of about 20 per cent. The stress-strain curves in Fig. 3 clearly illustrate this relation, which also agrees with the gen-

erally known conditions of rupture,¹⁶ namely that the fracture stress becomes equal to the maximum load stress at a finite ductility.

In Fig. 4b the notch strength values are plotted against the area removed by the notch, or notch depth, and extrapolated to a limiting notch strength for a notch depth of 100 per cent, using a linear relation previously observed^{15, 16} and confirmed by Kuntze. However, according to Kuntze's own experiments, Figs. 5 to 7, such a linear extrapolation is only valid for very ductile metals and alloys.

The effect of notch angle on this limiting notch strength, Fig. 4c, indicates, according to Kuntze, that the limiting notch strength also

reaches the cohesive strength if the notch angle becomes equal to zero. This conclusion is the basis of Kuntze's further work, but no attempts have been made to offer more decisive evidence than that presented in Fig. 4c.

Regarding the experimental technique, Kuntze chose 60-deg. notches of various depths. According to Fig. 4c, test bars provided with 60-deg. notches will give a limiting notch strength of approximately 96 per cent (or perhaps higher) of that of bars with an infinitely sharp (0 deg.) notch. Regarding this relation, it is not quite clear why, in later publications, a linear increase of limiting notch strength with decreasing notch angle has been assumed^{15, 17}, leading to much higher cohesive strength values than that found from the relations just discussed, Fig. 4c. It appears that a few quite intricate measurements of the elastic strains in notched bars¹¹ have induced Kuntze to introduce this questionable linear relation (Fig. 15).

The radius at the bottom of the notch in Ludwik's experiments was 0.008 in. and in Kuntze's approximately 0.005 in. The effect of the radius has not yet been investigated in detail. However, Kuntze^{4, 12} observed that the ductility of a notched bar decreases with increasing diameter. This has been attributed by McAdam^{17, 18} to the increasing sharpness of the notch, i.e., decreasing ratio of bottom radius to diameter. On the other hand, it appears that the relative bottom radius affects the ultimate strength

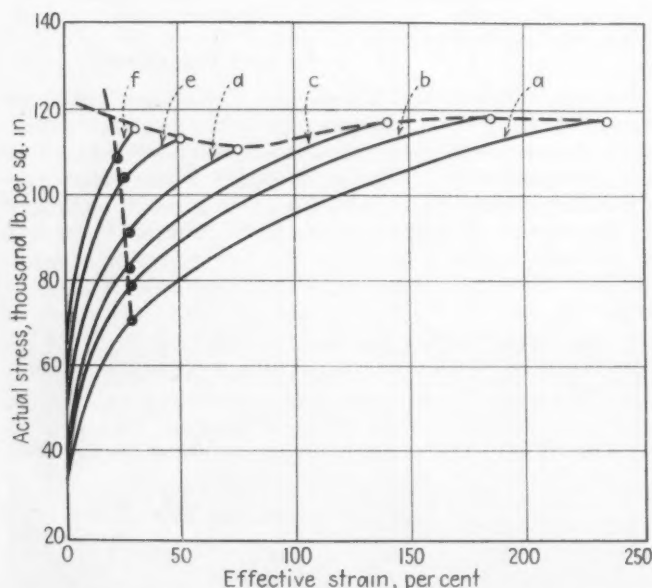
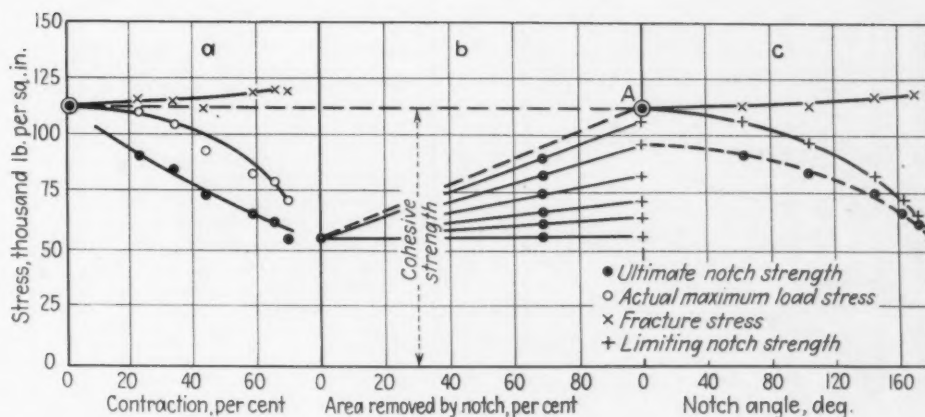


FIG. 3—This chart shows the actual stress-effective strain curves of the bars investigated by Ludwik.

FIG. 4—Kuntze's evaluation of Ludwik's notched bar tensile tests.



only if the ductility is very low. Later investigations have frequently used very sharp notches.

The experiments of Kuntze are for the most part, limited to the determination of the notch strength of bars having a 60 deg. notch of varying depth, Figs. 5 and 6. In most cases, the notch strength increases linearly with the area removed by the notch, as previously mentioned.

Observations

Regarding the behavior of various metals and alloys, the following general observations were made by Kuntze: (a) Most wrought metals and alloys in the commercial condition, including normalized steels, exhibit the linear relation between notch strength and area removed by notching, Fig. 5. The limiting notch strength (60 deg. notch) is usually between 1.7 and 2.2 times the ultimate strength of the un-notched bar. This "limiting notch strength ratio," therefore, appears to be close to 2 for the ductile metals and alloys.

(b) A number of metals and alloys with restricted ductility, such as some heat-treated low carbon

steels, duralumin, and brass also followed the linear relation, but this limiting notch strength ratio was as small as 1.2. A few tests by Matthes¹⁰ on duralumin and magnesium alloys also yielded notch strength values only slightly higher than the ultimate strength.

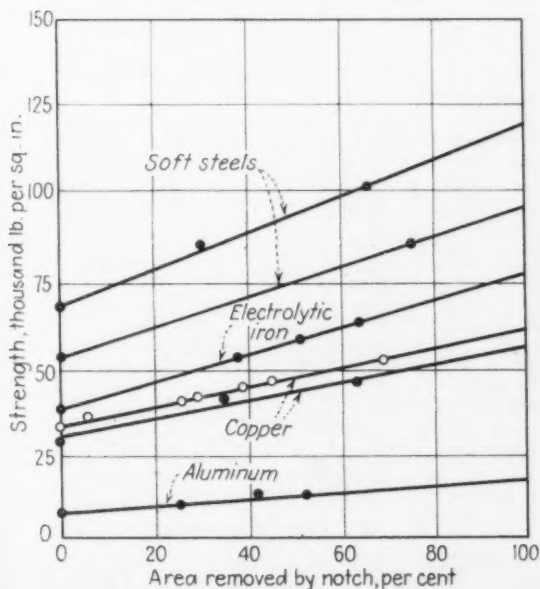
(c) Cast iron and cast steel, Fig. 6, possess a notch strength, on the contrary, which differs only slightly from the ultimate strength and shows a flat minimum at an intermediate notch depth.

(d) Some heat-treated steels having an ultimate strength between 100,000 and 140,000 lb. per sq. in. were also found to exhibit a notch strength which decreased at first with increasing notch depth and then increased to values considerably above the ultimate strength, Fig. 7.

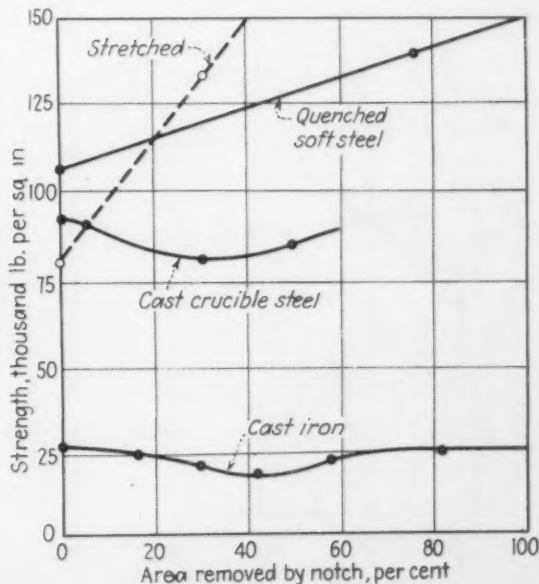
(e) Cold-worked metals again showed the linear relation, but usually had a higher limiting notch strength ratio than annealed metals. Very high ratios, up to 3, were

found for stretched metals^{4,10}. Davidenkov and Schewandin²⁰ confirmed this effect but also detected that compression considerably reduced the ratio. Thus, this ratio is a directional property and is probably related to the Bauschinger effect, i.e., increase of yield strength in the direction of strain but decrease of yield strength in the reverse direction.

The notch strength of a ductile steel does not depend upon the section size, according to Nadai and McGregor²¹, if the specimens are geometrically similar. Tests were made on bars having various diameters ranging from $\frac{1}{8}$ to 1 in. and provided with V and semi-circular notches having a radius proportional to the diameter. Contradictory results were obtained by Kuntz^{4,12} on a rather brittle steel, which yielded decreasing notch strength and notch ductility values with increasing section size. These results must be explained, however, at least partly as an effect of in-



FIGS. 5 and 6—These charts show the effect of notch depth on the ultimate strength of tensile specimens provided with 60 deg. notches. (After Kuntze.)



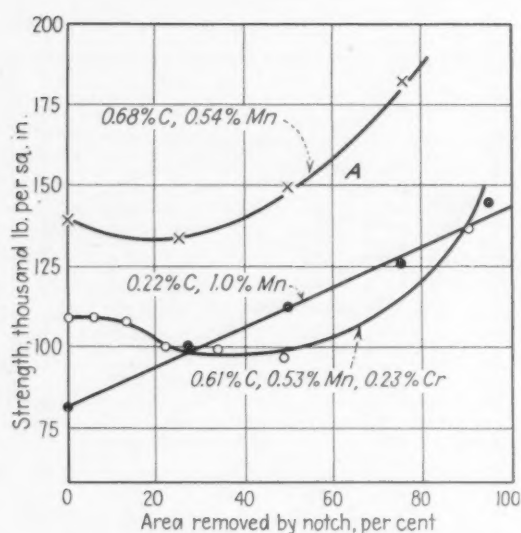
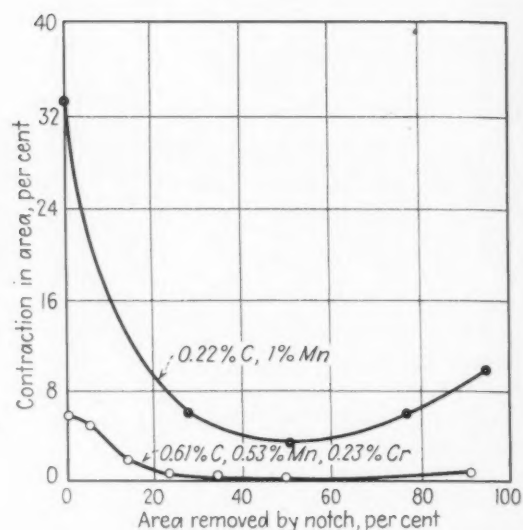


FIG. 7—The strength and ductility of various steels are affected as shown here by 60-deg. notches in $\frac{1}{4}$ -in. diameter rod. (After Kuntze.)



creasing sharpness of the notch, as the notches had a constant radius at the bottom.

Temperature Effect

Regarding the effect of heat treatment on steel, it has been mentioned already that the notch strength ratio might be reduced to an increasing extent by heat-treating to successively higher strength levels. Also notch strength vs. notch depth curves with a minimum, Fig. 7, might occur. Regarding the effect of testing temperature, some experiments of Floessner²² on an SAE 1060 steel having an ultimate strength of more than 120,000 lb. per sq. in. show that the notch strength, at temperatures above room temperature, remains a certain fraction higher than the ultimate strength, while it gradually decreases to values considerably below the ultimate strength if the temperature is reduced below

room temperature, Fig. 8. A few experiments on the effect of overheating, shown in the table, have been carried out by Davidenkov and Wittmann²³. The ultimate strength of a 0.25 per cent carbon steel was found to be the same in the normalized (1750 deg. F.), fine grained condition and in the overheated (2000 deg. F.), coarse grained condition. The notch strength at room temperature (60 deg.—84 per cent notch) also failed to reveal differences between the two conditions. However, the notch strength at the temperature of liquid air was much lower and scattered considerably more for the coarse-grained steel than for the fine-grained steel. Both of these notch strength values appear to be lower than the ultimate strength of the steels at the temperature of liquid air (estimated as 120,000 lb. per sq. in.) Tests reported by Gensamer²⁴ also show no difference in the notch strengths of

a properly heat-treated and an overheated SAE 4140 steel, both steels having an ultimate strength of approximately 180,000 lb. per sq. in. (Rockwell "C" hardness = 39.5). The notch strength of an SAE 1080 steel, heat-treated to an ultimate strength of 180,000 lb. per sq. in., however, depends to a large degree, according to Gensamer, upon the conditions of tempering, Fig. 9. Tempering for a short time at high temperatures produces a much higher notch strength than tempering for a long time at a low temperature. Some notched bar tensile tests by Gensamer, Pearsall, and Smith^{25, 26} on an SAE 1080 steel austempered at various temperatures showed the rather unexpected result, Fig. 10, that the notch strength was quite high for a steel having an ultimate strength of over 200,000 lb. per sq. in. but was almost as low as the ultimate strength for a steel having an ulti-

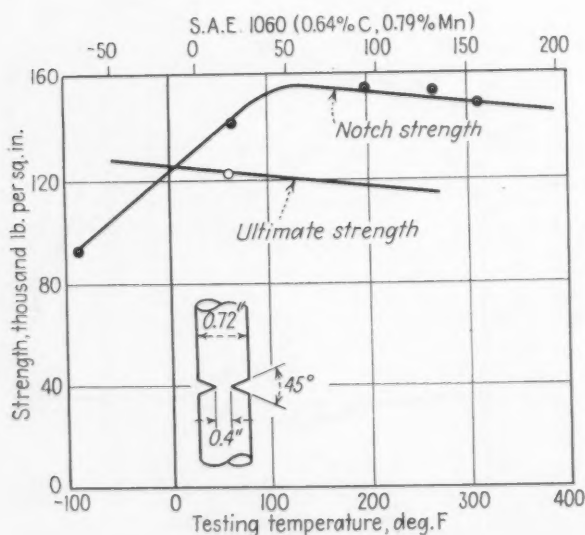


FIG. 8—Experiments by Floessner show the effect of temperature on notch strength. The specimens were SAE 1060 steel bars 0.72 in. in diameter.

FIG. 9—According to Gensamer, the notch strength of an SAE 1080 steel heat treated to an ultimate strength of 180,000 lb. per sq. in. depends, to a large degree, upon the conditions of tempering. Hardness is Rockwell "C" 48.5.

mate strength below 125,000 lb. per sq. in.

Additional Bending

Rather peculiar results have been obtained by Matthaes¹⁹ and by Kiessler and Connert²⁷ in tensile tests on notched bars which were subjected to an additional bending strain. Bending of various amounts was produced by placing shims with various tapers underneath the head of the test bar, Fig. 11. The notch strength of heat-treated alloy steels having an ultimate strength of 120,000 lb. per sq. in. was found to be affected by such an additional bending strain only in the over-heated state (having a low impact energy) and even then only to a slight extent. However, with increasing strength and decreasing impact energy the notch strength ratio might be reduced from approximately 1.25 (60-deg. notch, 25 per cent of area removed) to values as low as 0.3 for sufficiently large bending strains. The authors²⁷ claim that the various 0.30 per cent carbon alloy steels which were investigated differ little in their behavior in these experiments. Their results, Fig. 11, however, indicate that the nickel-chrome-molybdenum steel is somewhat superior to the chrome-molybdenum vanadium steel, which in turn is slightly less affected by bending than a nickel-chrome steel (0.33 per cent C., 0.57 per cent Mn., 3.43 per cent Ni., 0.93 per cent Cr.). These results are difficult to explain, and no attempt has been made to analyze the stress and

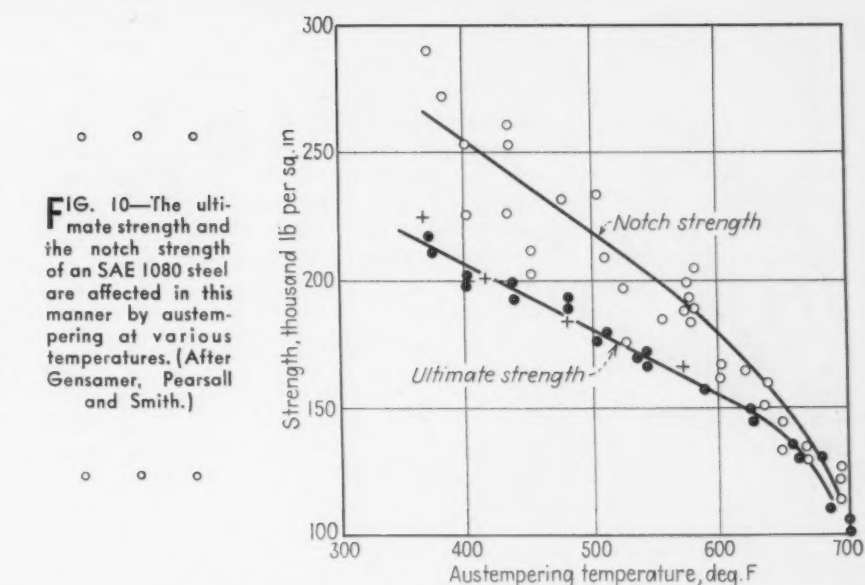


FIG. 10—The ultimate strength and the notch strength of an SAE 1080 steel are affected in this manner by austempering at various temperatures. (After Gensamer, Pearsall and Smith.)

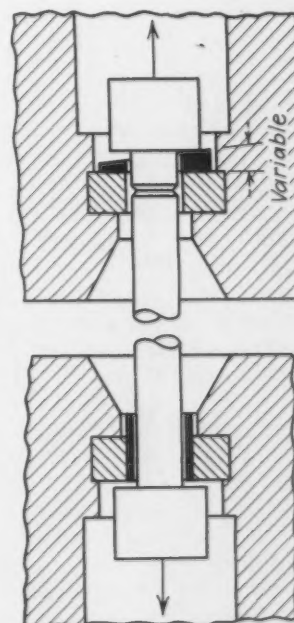
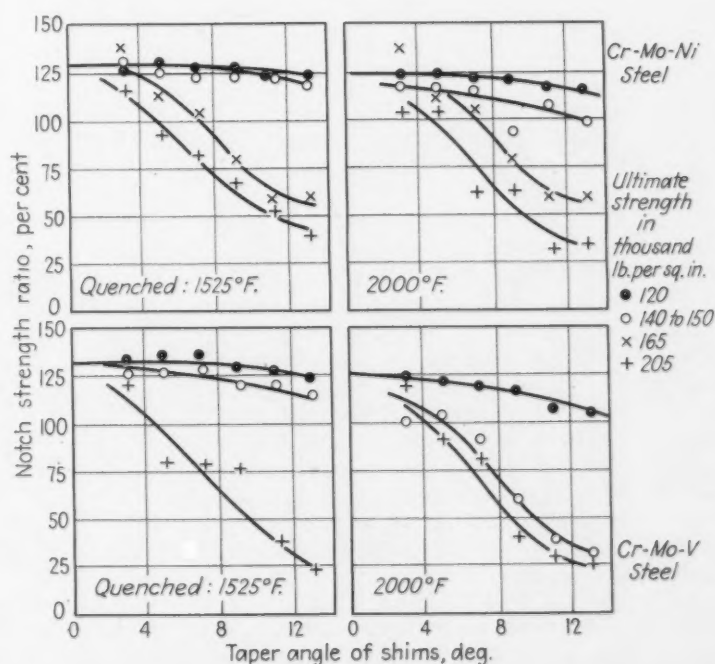
strain states in these tests. The direct results, however, are rather significant, namely, that a steel having a high strength level might fail at a lower (intentional) tension than a steel of a lower strength level if (unintentional) bending is also present, and that the magnitude of the impact strength has a considerable influence in this respect.

These results concerning the effect of additional bending on the notch strength of high strength steels also might explain the brittle breaks, which have not been investigated as yet, in the threaded ends of tensile test bars. Test bars of tool steel, for instance, should be provided with a cylindrical section

having only 25 per cent of the cross-sectional area of the section of the threaded ends, in order to avoid premature breaks outside of the gage length (see "A.S.M. Handbook," 1940 ed., p. 666). This can be taken as an indication that thread-breaks might occur at tensile stresses as low as 25 per cent of the ultimate strength, or approximately 75,000 lb. per sq. in.

The strength of cylindrical tensile test bars provided with a transverse hole was found by Matthaes¹⁹ to be slightly above the ultimate strength for a medium carbon steel and for aluminum but approximately 10 per cent lower than the ultimate strength for duralumin and for magnesium alloys. The contrac-

FIG. 11—These four charts show the effects of superposed bending, quenching temperature and strength level on the notch strength ratio of two heat treated alloy steels. Specimens were $\frac{5}{8}$ -in. diameter rods with a 60 deg. notch 0.040-in. deep. The cross-section view of the specimen holders shows the method of subjecting the bars to additional bending strain. (After Kiessler and Connert.)



tion in area of the steel was greatly reduced by the transverse hole.

Apparently no tests have been carried out on thin flat bars provided with notches on their narrow surfaces. Such tests should be particularly informative regarding the theory of the notch effects, as they approach the two dimensional, or biaxial condition. This condition is characterized by the absence of tension in the direction perpendicular to the wide surfaces of the test bars, and consequently little increase of strength is expected by notching the narrow surfaces. This is verified by tests performed by

investigated by Kuntze^{4, 18} and further discussed by McAdam^{17, 18}. The stress which is required to produce a plastic extension of 0.002 per cent decreases at first with increasing notch depth but then increases again, Fig. 12. For larger strains, however, the curve of yield strength *vs.* notch depth becomes more nearly straight, and for a plastic strain of 0.6 per cent the linear relation as previously discussed for the notch strength also applies to the yield strength. Thus it appears that the stress concentration introduced by the notch is decreased by a small plastic flow to an insigni-

do not completely eliminate the effects of the stress concentration induced by the notch.

Such stress concentrations which are retained after plastic flow has occurred must also be made responsible for the peculiar effect of the notch depth on the ductility (contraction in area) as observed by Kuntze^{4, 12} and further discussed by McAdam^{17, 18}. The few observations in this respect show that for sharp notches the curve of ductility *vs.* notch depth decreases rapidly at first, but with further increasing notch depth, it rises slightly again, Figs. 12 and 14. On the contrary, a gradual decrease of ductility with increasing notch depth would have been expected because of the corresponding increase in transverse stress, if the stress concentration was actually negligible. However, the experiments indicate first of all that the stress concentration still exerts a considerable influence at the break, and second, that this effect is a maximum at intermediate notch depths (30 to 60 per cent).

The "actual" stress at failure or "fracture stress," apparently is reduced also at first and then somewhat raised by increasingly deeper notches, Fig. 12. This relation is directly correlated with the corresponding effects of the notch on the flow stress and the ductility, as already mentioned. McAdam^{17, 18}, in discussing this effect, points out that the fracture stress of deeply notched specimens, according to Kuntze, is higher than that of unnotched specimens. He concludes from this that the fracture stress, if stress concentration were not present, should increase with increasing notch depth, *i.e.*, with increasing transverse stress. However, this conclusion disregards the complex stress state at the instant of failure of notched specimens.

The two principal factors which should be sufficient to explain the behavior of the notched section of a tensile test bar are thus: The presence of an average transverse stress; and the local concentration of longitudinal stress in the vicinity of the notch bottom.

An attempt has been made by Kuntze¹¹ to determine the ratio between transverse and longitudinal stress from the transverse strain in the notched section as measured at very low loads by means of a sensitive transverse extensometer, Fig. 15. An unnotched, soft steel

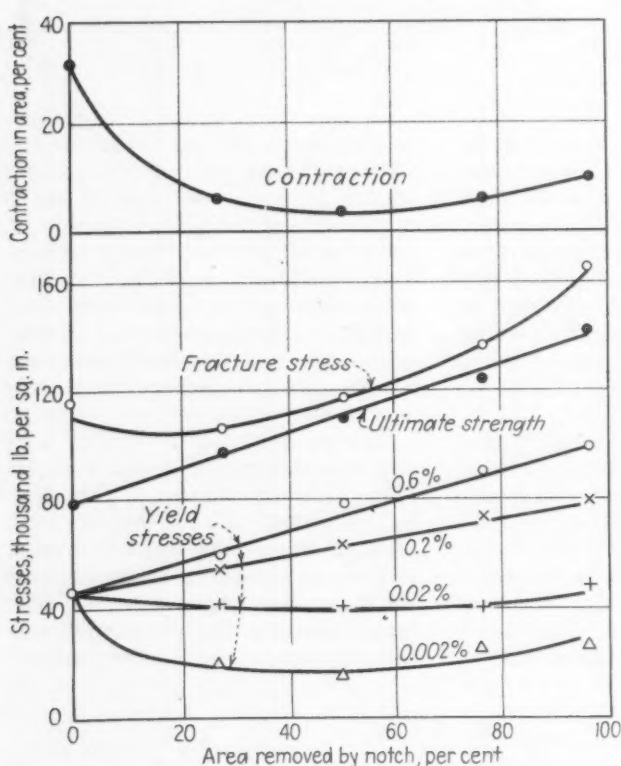


FIG. 12—The properties of a 0.2 per cent carbon—1 per cent manganese steel are variously affected by changes in notch depth. (After Kuntze and McAdam.)

Matthaes¹⁹ on flat bars provided with one or more holes. These tests yielded average strengths of the sections through the holes varying from 84 to 106 per cent of the ultimate strength, depending upon the metal and the dimensions of the test bars.

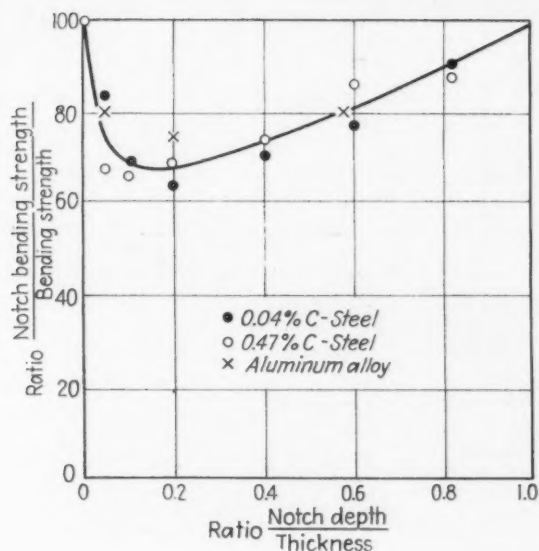
The effect of a notch in torsion tests appears to be of much the same nature as that in tensile tests, according to Davis²⁰.

Specimens provided with compound notches or threads^{7, 20} also behave in practically the same manner as specimens provided with a single notch which is equally sharp and deep²⁰.

The effect of notch depth on the yield strength values for various amounts of plastic strain has been

nificant factor, judging by its effect on the yield strength (or average flow stress required to strain the notched section). Also, according to the trend of the yield strength *vs.* notch depth curves, the stress concentration should be largest for notches of an intermediate depth.

This latter conclusion also explains the effect of sharp notches on the bending strength of ductile metals. Matthaes^{19, 20} observed that the average bending strength of a notched section is smaller for any notch depth than that of the unnotched bar, Fig. 13, and the curve shows a minimum for comparatively small notches. Thus, in the case of the bending of a ductile metal, the large deformations occurring before fracture apparently



bar contracts approximately as follows, per unit stress:

$$\frac{m}{E} = \frac{0.264}{30,000,000} = \frac{1}{113,000,000}$$

$$= 9 \times 10^{-9}$$

(E = modulus of elasticity, m = Poisson's ratio.)

On the other hand, a deeply notched bar expands in the notched section. This expansion for a 60-deg. notched bar extrapolates for a 100 per cent notch to a value per unit stress of approximately, Fig. 15:

$$6 \times 10^{-9} = \frac{1}{180,000,000}$$

From this relation, the wrong conclusion was drawn by Kuntze that the transverse stress becomes equal to the longitudinal stress. Later, by adding a few experiments, Kuntze⁴ corrected this conclusion to the statement that such a total triaxiality would be attained in a bar provided with a 0-deg., 100 per cent notch, while a 60-deg., 100 per cent notch would yield a transverse stress of 67 per cent of the longitudinal. The transverse stress resulting from the experiments represented in Fig. 15 is calculated as follows:

For a given longitudinal stress (s) and transverse stress (s_t , in two directions), the expansion (e_t) in the transverse direction is, according to the laws of elasticity:

$$e_t = \frac{1}{E}(s_t - ms_t ms)$$

$$= \frac{1}{E} \times [s_t(1 - m) - ms],$$

where E = modulus of elasticity = 30,000,000 lb. per sq. in. for steel; and m = Poisson's constant = 0.264.

For a 60-deg. notch, the unknown transverse stress is given by the equation:

$$\frac{s_t}{s} = \frac{E \times e_t}{s(1 - m)} + \frac{m}{1 - m}$$

$$= \frac{30,000,000}{180,000,000(1 - 0.264)} + \frac{0.264}{1 - 0.264}$$

$$= 0.227 + 0.359 = 0.586$$

Therefore, the transverse stress in a 60-deg., 100 per cent notched bar would be, according to these tests, approximately 60 per cent of the longitudinal. This method applies only to very small, purely elastic loads. Thus, according to the elastic measurements, represented in Fig. 15, an average transverse stress of 60 per cent of the average longitudinal stress would be present in a 60-deg. notched section under elastic strain.

The transverse stress present at the moment of maximum load, when there are much larger, plastic strains, can be estimated from the observation that the limiting

notch strength (s_n) is approximately twice the ultimate strength (s_u) of the unnotched specimen for a 60-deg. notch²⁰. Using the condition that the shear stress, or the difference between the principal stresses, should be constant during the plastic flow of a specific metal¹ and at the point of maximum load should be equal to the ultimate strength, the following relation results:

$$s_n - s_{tn} = s_u = \frac{s_n}{2}$$

$$\frac{s_{tn}}{s_n} = \frac{1}{2},$$

where s_{tn} = the transverse stress at the point of maximum load for the limiting condition (100 per cent notch). Therefore, at this point the average transverse stress amounts to approximately 50 per cent of the longitudinal stress. These values, 60 and 50 per cent respectively, indicate a triaxiality for a 60-deg. notch considerably below total triaxiality or "hydrostatic tension" where the transverse stress would be of the same magnitude as the longitudinal. This would indicate

Effect of Temperature on Notch Strength

Condition of Steel	ROOM TEMPERATURE		LIQUID AIR TEMPERATURE (-300 deg. F.)
	Ultimate Strength, Lb. Per Sq. In.	Notch Strength, Lb. Per Sq. In.	Notch Strength, Lb. Per Sq. In.
Fine-grained.....	53,000	75,000 to 81,000 (78,000 average)	88,000 to 133,000 (108,000 average)
Coarse-grained.....	49,000	75,000 to 78,000 (76,000 average)	53,000 to 103,000 (83,000 average)

that for a 60-deg. notch a condition of hydrostatic tension would not exist, and consequently ductile metals would not fail in a brittle manner. This supposition is confirmed by the fact that the ductility *vs.* notch depth curves, determined so far, do not approach zero ductility for a 100 per cent notch, but the ductility apparently again increases for very deep notches after having passed through a minimum. (Figs. 7 and 14.)

Editor's Note: Next week the authors conclude this two-part abstract with data on stress distribution in notched tensile specimens and a discussion of some fundamental conceptions of cohesive strength.

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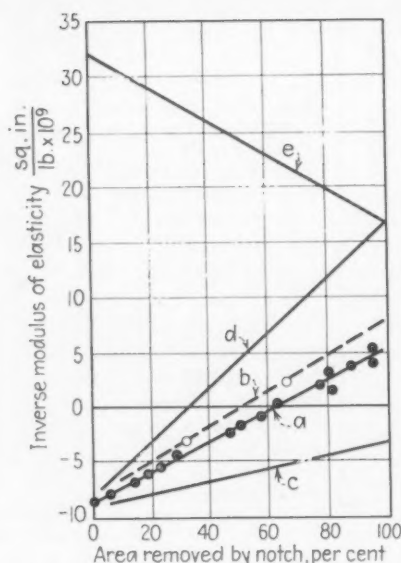


FIG. 15—Transverse elastic strain of notched sections of steel bars is affected in this manner by variations in notch depth. Notches are as follows: a, 60 deg.; b, 60 deg., corrected; c, 135 deg.; d, 0 deg.; e, 0 deg., corrected. (After Kuntze.)

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Machine Lettering Speeds Drafting

WITHIN the last year, a method of lettering engineering drawings, bills of material and specifications has been developed by the Ralph C. Coxhead Vari-Typer Corp., New York. The method, which employs a special Vari-Typer built to handle large sheet sizes and a number of type faces, is credited with shortening the finishing time on drawings by about 500 per cent. A number of instances cited by users indicate that drawings which

normally require five days for hand lettering can be lettered easily by the machine in one day.

The machine, basically a standard office composing machine, is equipped with instantly changeable types and spaces, operates like a typewriter but can take a sheet 20 ft. long. A super-carriage with extending bars at each end makes this large sheet handling capacity possible. The carriage is movable so that the operator can work on any

part of the drawing and an ingeniously devised feed roll lever permits the extension of the tracing roll beyond the normal carriage of the machine.

Interchangeable cylindrical type fonts permit use of a variety of sizes and styles of alphabets. An adjustable spacing arrangement is provided to allow for the different widths of type required by the various alphabets.



The Focke-Wulf Fw 190A3

SOMETHING of the legend of superiority which surrounded the Messerschmitt Me 109 in the early days of the war has grown up around the new German Focke-Wulf Fw 190 fighter during the past few months. Its record in combat since it first appeared in September, 1941, has proved its quality. But now at last the English are in a position to judge its true merits on a real foundation of fact, according to *Aeroplane*. It's good—it's even very good. But there's nothing mystical about it and it's far from unbeatable.

If there was any German airplane the English could have chosen to have captured intact for inspection and flying trials it would have been the Fw 190. And, providentially, one was forced to land intact in England some time ago. Immediately, the English were able to examine it closely and watch it fly.

The conclusions are these. This Focke-Wulf Fw 190A is a remarkably compact and efficient fighter, heavily armed, well armored and fast. But it is not a high-level fighter—it cannot fly as high as the Me 109F—and, because of its high landing speed it is not a particularly easy machine to fly. It shows room for further development, but there is no fighting feature about it which cannot be done better. As things stand at present the Focke-Wulf Fw 190A3 is undoubtedly a very formidable fighter between

about 16,000 ft. and 24,000 ft.—as good as anything else in the world at present. Above and below those heights, it is less dangerous.

Technically, the most interesting feature of the design is the use of an air-cooled engine, magnificently cowled and efficiently cooled. Aerodynamically, the machine is poor; structurally it is excellent; electrically it is first class; as a production job it should be easy, as a result of much painstaking care and thought; from a flying viewpoint it is delightful on the controls, but its finish is bad, its range limited, the engine rough and its boost low.

In detail, the top speed on normal boost is 375 miles per hr. at 18,000 ft. In an emergency the throttle can be put "through the gate," and with override boost and high r.p.m. the absolute maximum for one minute is 390 miles per hr. at 20,000 ft. The speed falls off rapidly above and below this height—at 4500 ft. the top speed is 326 miles per hr. The machine has to be brought in at 125 miles per hr. and touches down at 110 miles per hr. The undercarriage is well forward so that severe braking is possible.

Armament

Armament is four cannon and two machine-guns. The two 7.92 mm. (0.314-in.) Rheinmetall-Borsig machine-guns are mounted on top of the fuselage in front of the pilot. They fire through the propeller at a rate of 600 rounds per

min. each and have 1000 rounds of ammunition each. The combined weight of their fire is only 35 lb. per min.—equal to only one of the English wing-mounted Brownings.

Two 20 mm. (0.7874-in.) Mauser cannon are mounted in the wing roots and fire through the propeller. *This is the first time cannon have been used with interrupter gear.* These Mauser cannon are very fine weapons with a high rate of fire and high muzzle velocity. Without interrupter gear they fire at the rate of 950 rounds per min. With allowance for the very wide blades of the three-blade propeller their rate of fire in the Fw 190 is probably not more than 700 rounds per min.—despite other quotations of higher figures. But 700 rounds per min. is quite useful and gives a combined rate of fire of 350 lb. per min.—10 times that of the machine guns. Each Mauser has 200 rounds of ammunition—enough for 17 sec. of firing.

The two outer cannon mounted in the wings outboard of the propeller are, by comparison, poor weapons. They are 20 mm. Oerlikons with a rate of fire, uninterrupted, of only 450 rounds per min. Their muzzle velocity is low. Each gun has a 60-round drum which appears to be filled with 55 rounds, normally, giving a duration of fire of $7\frac{1}{2}$ sec. The weight of fire from the two Oerlikons is 225 lb. per min.

Thus the total weight of fire is about 610 lb. per min.—which is

very great indeed. It is made less effective by the short range of the machine guns and the poor hitting power of the Oerlikons and thus does not compare so favorably with the English four-cannon machines as appears at first.

Layout

In general the Fw 190A3 is a very small, compact airplane and shows everywhere much evidence of careful thought and excellent team work between the designers of the airframe, engine and accessories. Every service is worked electrically except the wheel brakes and the constant-speed gear of the VDM propeller, which are hydraulic. The 24-volt electrical system is good and works well. The Germans are past masters of this sort of detail.

Aerodynamically, the Fw 190 is a low-wing monoplane with equal taper on leading and trailing edges and square-cut wing tips. The single fin and rudder is unbraced, the cantilever tailplane is adjustable, the wide track undercarriage retracts inwards and the tailwheel backwards. The BMW 801D 14-cylinder two-row air cooled radial motor projects very little in front of the wing. Its close fitting long chord cowlings has fan-assisted cooling, but is not controllable for air entry or exit in any way. Maintenance is obviously easy except for the 10-hr. inspection on the engine; as the back is most inaccessible only a few accessories have been grouped there. For any major work the engine can be removed from the five-point suspension.

Curiously enough, the aerodynamic design seems poor. The aerofoil section is bad with a very blunt entry and maximum thickness relatively far forward. It is certainly nothing like the American low-drag sections. The finish, too, is bad and the joints where the doors fit over the gun trays are poor. Compared with standard British finish on production machines the finish is most inferior. *The Fw 190 is very widely subcontracted.*

Detail design seems good. The wing is built up on one main and one auxiliary spar and is in one piece. This makes repair difficult, but saves something like 300 lb. in weight. The same is true of the fuselage which is also in one piece. No trimming tabs are provided anywhere—only small, perforated plates on ailerons, elevators and rudder, adjustable on the ground. Change in trim is looked after by the adjustable tailplane which is a

possible source of weakness. Because of this difficulty in trimming the undercarriage must not be lowered at any speed less than 120 miles per hr. The split flaps are selected for position by press buttons in the cockpit. From take-off they are drooped 10 deg.; 60 deg. of droop is used for landing.

The cockpit is small, but the layout excellent. The controls are remarkably frictionless and this has been achieved without recourse to balances of any sort. An interesting feature is that the last couple of inches of travel in the pulling back of the stick to land locks the tailwheel centrally. Strangely enough, the view from the cockpit is good, except for taxiing. The cockpit cover slides backwards complete with all the fairing, but it cannot be opened in the air or even when the motor is being run up. Cockpit ventilation is good; there are no draughts and no fumes. *To bale out, the whole hood can be jettisoned by pressing a button, when a cartridge fires and breaks the supporting tube, allowing the hood to blow clear.*

The cockpit is well appointed and has a very complete instrument equipment. The instruments have conveniently small dials which is a good feature.

The armor has been carefully fitted. A panel 14 mm. (0.55 in.) thick is placed in the sliding cover behind the pilot's head. A bulkhead 8 mm. (0.35 in.) thick is behind his seat. The windshield—which is sloped at an acute angle—has bullet-proof glass 2¼ in. thick. The reflector gun sight inside the windshield is small, neat and apparently efficient. The nosing of the cowlings is armored with 5-mm. plate and the second portion of the cowlings covered with 3-mm. armor. As a result of this well disposed armor the Fw 190 must be very difficult to destroy by machine gun fire, although it is naturally vulnerable to cannon.

No fuel is carried in the wing. There are two tanks in all with a total capacity of 115 gal.—a tank of 51 gal. under the pilot's seat and a tank of 64 gal. behind that. Both are self-sealing in the normal way.

Naturally, the engine is the heart of the machine. The BMW 801D is of remarkably compact proportions. Exact performance details have not yet been ascertained, but the normal maximum appears to be about 1600 h.p. at only 4.5 lb. boost—which is remarkably small. The ab-

solute maximum—according to German sources—with the override boost in operation—is about 1760 h.p. and that gives the maximum speed of 390 miles per hr. at 20,000 ft. Unlike the BMW 801A in the Do 217E1, the cowlings of the Fw 190 has no controllable entry or exit. The oil cooler is in the nose of the cowlings with fixed area, reverse flow, through it. The main cooling air is exhausted through louvres at the side of the cowlings. Six exhaust manifolds eject under the cowlings and there are four additional manifolds on each side.

The very wide blades of the VDM airscrew are of small diameter and this fact must seriously handicap the performance at height. Bigger diameters are restricted by the length of the undercarriage which has a track of about 12 ft. and is already stalky. It is electrically retracted inwards and, as it goes up, doors, partly closing the wells, open to admit the wheels and then close round them, completely sealing the undercarriage. It is one of the best undercarriages on any known plane, the only better being that of the North American Mustang. The tailwheel is retracted ingeniously by a simple cable which is pulled up by the motion of the main undercarriage while retracting.

Provision is made for a 551-lb. bomb to be slung under the fuselage just behind the undercarriage. It is electrically released.

From a flying point of view the Fw 190A3 handles well. The ailerons in particular are finger light and remain authoritative right down to the stall. A virtue of the Fw 190 is that it can be rolled at fighting speed and its diving speed out of a fight is very high. However, the high wing loading makes necessary a wide radius of turn and British fighters can turn inside it.

Obviously, the Fw 190 was built to win air superiority. It was probably designed as a dog-fighter rather than a bomber-destroyer and the fact that the enemy are using Fw 190s in preference to the Me 109F in the West tends to confirm this view. The small span and the limited fuel capacity and short duration of fire suggest the same thing. The very heavy armament has been added since the design was originally conceived in 1938 and probably since the first flying trials at the end of 1940. The whole of the design, particularly the absence of trimming tabs, suggests

(CONCLUDED ON PAGE 163)

Welding Design, Specifications and Inspection

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CONSIDERABLE criticism has been directed towards certain types of specifications and inspection limits. Some of this has been just general objections, some fault-finding, and some definitely constructive. Of the last named, there has been too little attention directed towards defining the ultimate performance of the part being manufactured. The performance required, the method of manufacture and the control of and by that method must be studied and co-ordinated.

Failure to recognize the ease and simplicity of control of the fabrication of welded parts, for example, and failure to put these controls into operation has resulted in confusion, time lost and considerable argument. A good deal of this delay could have been avoided if the manufacturing requirements and limits were matched up with the performance necessary. Wide limits where performance permits and close limits where required are illustrated by the following general examples. The variation in a dimension of $\frac{1}{8}$ in. or even $\frac{1}{4}$ in. on a structural frame is of no great consequence where the structure is, let us say, a single member, such as a small portable bridge to go over a depression. In a case like this, the requirements to hold dimensions to thousandths of an inch would be costly in time, and produce no results justifying that cost in time.

Getting down to somewhat closer limits, the fit of bolts and the holes of parts joined can be much more sloppy than the fit of a shaft in a

... In this discussion of policy, the author points out that if the ultimate performance of the product is constantly kept in mind by designers, engineers, fabricators and inspectors, unnecessary expense to reach close tolerances will be avoided, yet all the performance required will be attained.

bearing. Some of these conditions are illustrated in the photographs. Inspection and study of these, keeping in mind the above statements, indicate the scope of the problem.

This general problem may be considered under five divisions: Design, specification, fabrication, inspection and performance.

Design

Design is not just a matter of figuring out strengths and sizes involved. There must be kept in mind at all times the ultimate performance required, and the speed of production necessary. A designer also must be familiar with usual types of machines and not call for unusual types of equipment. Assembly must be such that it is easily done. As regards such matters as fit-up, how much variation can be allowed? How easy is it to put the parts together? How accessible is the weld? Can the operator see what he is doing, and are the welds easily inspected?

The designer will find it necessary to select certain materials. Particularly at this time, this is a

great problem when substitutions or replacements are necessary.

Too little thought is often-times given to the matter of fabrication by welding and machining. A part may be easily welded, but is it possible to machine it at a low cost? Jigs, fixtures and even transportation equipment, such as cranes and trucks, must be considered. These factors will have their effect upon the size of the part that may be laid out. The greater time spent in the drafting room in considering all of these items and others that will occur to the designer as he studies his individual problems will be well worth while in terms of actual results in the shop and increased production speed.

Specifications

Specifications must be clear, complete and reasonable—and the term *reasonable* is to be interpreted, not from the viewpoint of the fabricator, but from the viewpoint of producing the desired results in the shortest possible time. Variations may be permitted, both in material and dimensions, but these should be clearly

* Died Sept. 19, 1942.

stated, with the definite requirements named, so that if the fabricator has in mind the use of an alternative material, he can determine to a reasonable degree whether or not that material would be satisfactory.

As an example of lack of consideration of this item, stainless steel has been used in a number of cases when SAE 1020 steel would answer the purpose very well. Why? Because the designer failed to interpret his design in terms of the

has been laid out. Welding, however, is a rather flexible process—in fact, a *very* flexible process—as indicated in the following example taken from an actual job: On this particular job, a welding procedure involving the use of 5/32 and 3/16 in. electrodes, with three passes for the seam, had been approved. It was evident, by looking at the job, and due to the fact that it was to be made in a flat position, that 3/16 and 1/4 in. electrodes could be used and that

approval, nothing else would get by. Increasing electrode diameters is something that can be done right on the job, resulting in a great increase in production and involves nothing special.

To indicate all of the different conditions that might be improved by action similar to the above would involve a very lengthy discussion. Suffice it to say that the fabricating department can study each job and will find time and time again that it is possible to



FIG. 1—Here a welder is shown working on a new type of lathe. Certain dimensions on equipment of this type must be very accurate—on others the limits or tolerances need not be so close.

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performance of the equipment and blindly followed some previous design. Then again, limits are specified that are ridiculous in view of the required performance. If the limits are such that the time of machining is unduly increased without a proportional increase in performance, then such limits are not justified. If the specifications are hazy or indefinite, here again performance requirements may not be met.

Fabrication

Provision must be made for handling, transportation, good fit-up (this, of course, goes back to the matter of design), jigs, fixtures and machining operations. All of these fabricating processes are more or less fixed after the design

the bead could be laid in two passes, resulting in a 40 to 50 per cent saving in time. When the question was raised as to why this was not being done by this time-reducing method, the answer was that it was not approved. Further investigation disclosed that the inspection department had not been asked to approve this higher speed production method. Instead, the fabricating department had assumed that, because of a previous

reduce the time of production. For example, in one very important job for the war effort, the initial arc speeds were 6 in. a min. An improvement in handling resulted in an increase of speed to 9 to 11 in. Further improvement in jigs and fixtures and conveying equipment resulted in a welding speed of 15 to 18 in. a min., and at the present time the joints are being produced at the rate of 21½ in. a min. It takes no time to figure out what that means in the way of production for the war effort.

On the dark side of the picture, however, is the case of manufacturing equipment for the war effort where the fabricator is only laying down 1½ lb. of electrode per hour per man. Yet the design is such that if the job were positioned and



ABOVE

FIG. 2—Arc welded penstocks are used in practically all of the great dams constructed to provide power for the country and the war effort. This illustration shows a workman fabricating a penstock by means of Lincoln "Electronic Tornado" automatic welding. The minimum permissible tolerances here are greater than on the lathe shown in Fig. 1, but for the size of part are rather close.

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expertly handled, at least three times or perhaps four times that amount of electrode could be deposited. Making this change, of course, would mean a tremendous increase in production. It is these apparently small items that are of such great importance in increasing production.

Another example involves the increasing of speed of travel of the arc. A 20 per cent increase in current and a doubling of the speed resulted in a stronger joint. The

advantages in time-saving are obvious.

Inspection

One of the great difficulties in the matter of inspection is to get the right combination of individuals; that is, an experienced inspector plus an experienced fabricator. If either one of these is inexperienced, then the combination is rather difficult insofar as the matter of production is concerned. The situation is particularly annoying if the inspector is inexperienced. Such a man has a tendency to follow the "book," and un-

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BELOW

FIG. 3—Welders are fabricating this steel machine base from slabs of strong steel, securely unified by means of the electric arc. The spacing of the stiffeners and ribs does not need to be as accurate as machined surface dimensions.



less the specifications are exceedingly detailed, delays occur as a result of the caution of the inspector. It is assumed that the inspector is reasonable but inexperienced. If he is over cautious—and in the mind of the fabricator this characteristic is termed unreasonable and in a great many cases *is*—one production delay after another results. In the aggregate, these are exceedingly serious. This statement is not to be interpreted as saying that the inspectors should be indifferent or sloppy, but it is definitely to be interpreted to mean that rigid adherence to certain details of no consequence should be removed. Again, this situation goes back to the factors of design and specifications.

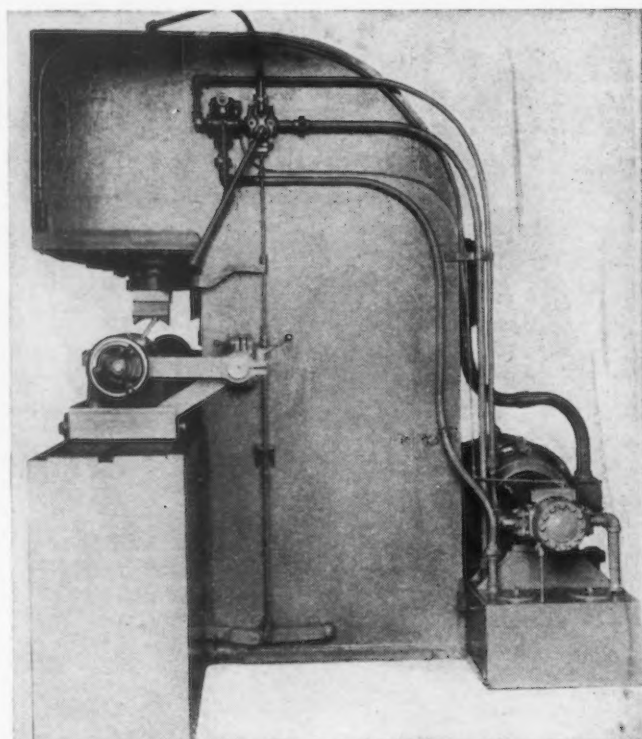
As a result of what may have occurred in one situation, the inspector rejected certain parts because the bead was too large. It would appear logical that a smaller bead could be made at a higher rate of speed than the larger one, due to the difference in deposited metal. It so happened, however, that due to the shape of the parts and the position, a somewhat larger bead, which was merely *indicated* on the drawing but not dimensioned, could be made in a much shorter time and actually re-

sulted in a much better job. But because it did not look like the drawing, the inspector wanted to reject the work. After all, the object was to weld these two parts together so that the assembly would perform in a certain way, and if it could be done in a shorter

time, even though the bead was apparently a little bit large, which as a matter of fact it was not, the job should have been passed. Much delay resulted because of a discussion over this small item—the weld was only 8 in. long, but was on a part that was important. All this trouble

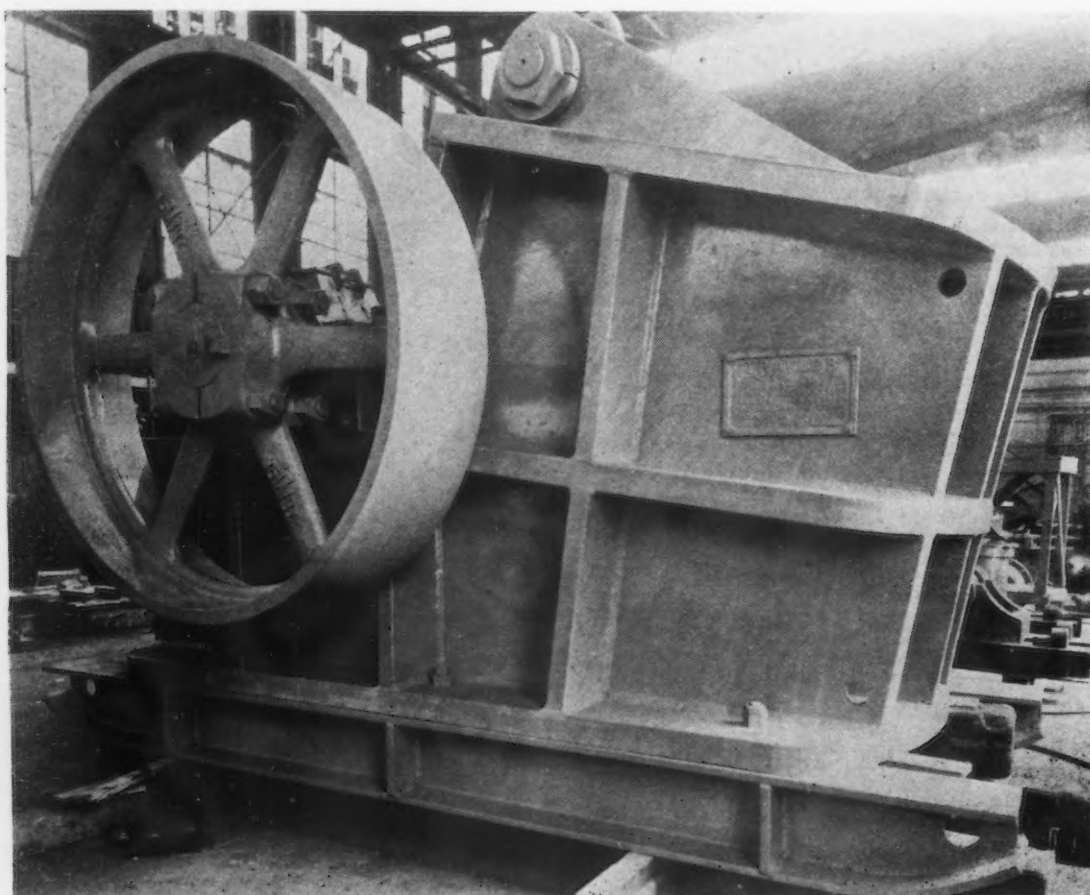
RIGHT

FIG. 4—This machine is made up entirely of standard steel plate sections welded into one integral unit. The press has a capacity of 350 tons and a 10-in. ram stroke. Note how design permits fabrication within rather close limits, yet allows possible variations in other dimensions.



LEFT

FIG. 5—One of the largest all-welded jaw crushers ever made. The height of skid may vary within rather wide limits, but bolt holes must be more accurately located, and machined surfaces still more accurately placed.



occurred because the inspector for the purchaser was inexperienced and the drawing was not complete. So again, it was a matter of design.

Numerous examples of this type could be given, but the mere statement of them would be in line with the first paragraph of this discussion, namely, faultfinding without constructive suggestions, and so the above will suffice to illustrate the point.

Performance

After all is said and done, the objective of all of the above activities or methods is the performance of the part. In this war effort, time of delivery is vital and the entire discussion above might, of course, be grouped under this subject of performance, because all of the factors are involved. It is vital that the inspecting officer be assured and satisfied in his own mind that the parts will perform effectively in the field under service conditions. By "in the field" is meant at the point of use, whether it be civilian or military require-

ments. After the inspector has determined that the part will perform satisfactorily in the field, any requirement beyond that point of satisfaction is just a waste of time and money. The item of time must be kept in mind constantly because that is of prime importance.

As this is a discussion having to do with welding, it must be emphasized that these increased speeds of production mentioned result from the use of a larger electrode and an increase in the speed and current on the proper size of electrode. This saving of time by proper design, specification and fabrication can be done on present production lines, that is, the welding lines, and done right now. There is no need for any delay. The superintendent or supervising executive can go into the plant immediately and start to do these various operations as outlined above, resulting in a time saving, and he can gain that immediately. The highest speed production will not be reached at once, but a rate very much better than the present one will be obtained, and

the greatest possible effort should be placed upon an immediate action along these lines. It is so easy to do and so effective as far as results are concerned.

In brief, we can say this much in connection with the factors mentioned above:

Design—Keep in mind the matter of ultimate performance, and the steps necessary to achieve that performance, from the very start of the design.

Specifications—Make them definitely outline the details of the design.

Fabrication—Aim at high speed in manufacturing methods.

Inspection—Make inspection adequate so that satisfactory performance will result, but no more.

Control of all these factors will result in the production of a product which will perform and perform excellently, and the production will then be done in a very short time compared to what is being done in a great many shops now. Our war effort demands such action.

Dry vs. Wet Grinding of Carbide Tools

AMONG the major problems to be decided in tool shops is whether carbide tools are to be wet or dry ground. While it is entirely feasible to hand grind such tools satisfactorily either way, each method has its own peculiar advantages and disadvantages causing the decision as to which procedure shall be followed to rest entirely on the basis of which presents the fewest obstacles in a given plant.

The major advantages and disadvantages of each method have been listed in the table. Based on field experience over the past 14 years, reported by J. R. Longwell, factory manager, Carboloy Co., Inc., Detroit, dry hand grinding is favored, chiefly because it presents fewer difficulties in obtaining properly ground tools. This, of course, would not necessarily hold true when tools are machine ground, as there are other factors to be considered.

The difficulty of applying wet grinding to the refinishing of carbide tools on hand grinders lies primarily in the quantity of water used. There is a decided tendency

on the part of the operator to use too little water in order to keep from getting splashed. With carbide tools, using too little water is decidedly worse than using none at all; the extremes of deluge grinding or bone dry grinding are the only satisfactory means of grinding such tools. However, from a practical standpoint, field experi-

ence has continuously demonstrated that operators do a better job of dry grinding than wet.

Irrespective of the method used, correct grinding of carbide tools is not difficult, but centralizing all tool grinding instead of leaving such work to the individual machine operator has proved most satisfactory. The accompanying illustra-

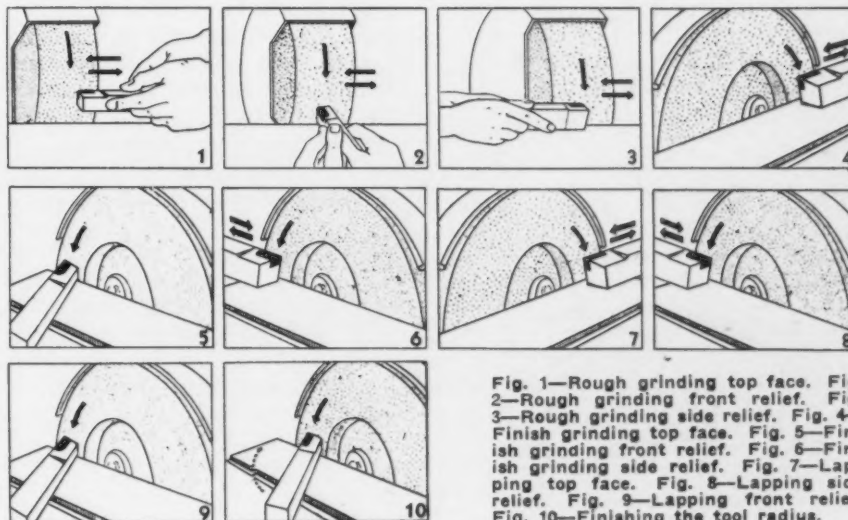


Fig. 1—Rough grinding top face. Fig. 2—Rough grinding front relief. Fig. 3—Rough grinding side relief. Fig. 4—Finish grinding top face. Fig. 5—Finish grinding front relief. Fig. 6—Finish grinding side relief. Fig. 7—Lapping top face. Fig. 8—Lapping side relief. Fig. 9—Lapping front relief. Fig. 10—Finishing the tool radius.

Comparison of Wet and Dry Hand Grinding of Carbide Tools

Advantages	Dry Grinding	Disadvantages
<p>More uniform temperature rises in tool tip.</p> <p>Low temperature rise in tool tip if contact area with wheel is kept at a minimum.</p> <p>Eliminates too rapid tip cooling.</p> <p>Eliminates water absorption with resulting wheel unbalance in silicon carbide wheels.</p> <p>Permits close observation of operator.</p>	<p>Dust requires extensive exhaust and ventilating systems.</p> <p>Reduces wheel life, when open bond wheels are used.</p>	
	Wet Grinding	
<p>Cool tool shank permits handling.</p> <p>Dust is carried away by water, eliminating necessity for exhaust systems.</p> <p>Permits use of a wheel one grade harder, with reduced wear if water volume is sufficient.</p> <p>Permits increased grinding speeds if water volume is sufficient.</p>	<p>Temperature rise in tip, caused by cutting action of wheel, causes water to evaporate around cutting edge and keep inflow water back. This results in intermittent heating and quenching of the tip.</p> <p>Operator is unable to see work when sufficient volume of water is used for cooling.</p> <p>Operator is drenched when ample water is applied.</p> <p>Floor around the grinder is wet.</p> <p>Checked and cracked tips due to alternate heating and cooling of the tip when the tip is not at a uniform temperature throughout.</p> <p>Open bond silicon carbide wheels absorb water and become "out-of-balance."</p> <p>Requires frequent cleaning of tank to prevent sludge from causing pump trouble.</p> <p>Tools must be wiped off before angles, radii, etc., can be checked.</p>	

tions cover the basic fundamentals of correct carbide tool grinding practice.

Fig. 1 shows rough grinding the top face of the tool, leaving about a 1/32-in. land at the cutting edge. Rough grinding the front secondary relief, leaving about 1/32-in. land at the cutting edge is shown in Fig. 2. The table is set at 4 deg. greater than the finished relief angle desired at the cutting edge. In rough grinding the side secondary relief, shown in Fig. 3, the table is left at 4 deg. greater than the finished angle desired, and a

1/32-in. land is left at the cutting edge. In rough grinding, a 60 grit, silicon carbide straight wheel is used.

Using either a 100 grit crown face cup wheel or a 100 grit diamond wheel, the finish grinding is completed. Figs. 4 to 6 show these operations. Fig. 4 illustrates finishing the top face of the tool, and in this operation the table is set at the finished top face angle desired. Fig. 5 shows the finishing of the front relief of the tool. When continuing from the operation shown in Fig. 4, the motor

is reversed and the other side of the wheel is used so that the wheel will revolve against the cutting edge of the carbide tip. The tool rest is set at the finished relief angle desired. To finish the side relief of the tool, as shown in Fig. 6, the table rest is left at the finished relief angle desired and the side relief of the tool is finish ground.

In lapping, a 220 grit diamond wheel or a silicon carbide wheel is used. Lapping is advisable on tools used for precision boring, facing and turning, and for tools used for machining aluminum. Fig. 7 shows how the table rest is set at the finish top face angle desired for lapping the top face. When grinding on the top face is necessary, it should always precede grinding on the side or front relief. When continuing from the operation shown in Fig. 7 to lap the side relief of the tool, shown in Fig. 8, the motor is reversed and the other side of the wheel used so that the wheel will revolve against the cutting edge of the carbide tips, that is, from tip to shank. The table should be set at the finished relief angle desired, which is usually 1 deg. less than under the operations shown in Figs. 5 and 6, for side relief lapping. Leaving the table rest set at the finished angle, the front relief is then lapped, as shown in Fig. 9. Fig. 10 illustrates how the finish radius of the tool is lapped. Leaving the table rest at the finished angle desired, the radius on the nose of the tool is lapped. Light pressure should be used, and a free hand arc should be slowly described by the tool nose against the wheel. If it is necessary to repeat this operation, a different position on the wheel should be selected.

Tools should be kept moving back and forth across the wheel at all times while roughing, finish grinding, and lapping. During the rough and finish grinding, tools should be kept rocking against the wheel.

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Practical Suggestions

Concerning the

Heat Treatment of Tool Steels

TOOL steel is expensive, costing from 10c. to over \$1 a pound. Even more important, however, is the fact that it is an essential material, increasingly difficult to obtain and demanding conservation through proper handling.

Not overlooking the fact that proper design, correct grinding technique, and several other factors all play major parts in conserving tool steel¹, it is felt that a

(1)—Among excellent references on design, grinding and such factors is *Metals Handbook*, 1939 edition, published by the American Society for Metals; particularly pages 214-219 inclusive.

review of General Electric recommendations and practices concerning the heat treatment of tool steel may contribute something to today's important conservation program. The following does not represent a contribution of new information, but rather is a review of those things which should be kept in mind by all who work with tool steels—things which, however, are often forgotten. And, too, tool steels are being handled today by many who have yet to learn by experience those relatively few rules that proper heat treatment demands.

Before proceeding with any heat treatment of a tool steel, it is important to have a clear understanding regarding the kind of

. . . For both the experienced and inexperienced heat treater, the author gives a brief, concise review of accepted methods for heat treating tool steels, including some tips on frequent errors.

° ° °

By J. E. ERB

*Schenectady Works Laboratory,
General Electric Co.*

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steel, the grinding or finish allowance (if any) and the hardness expected. If selective hardening is desired, it should be clearly indicated by drawing or sketch (Fig. 1). If in doubt on any point, the heat treater should get in touch with the interested foreman before proceeding. He should do likewise if, in his opinion, the design is such that failure in heat treating is likely to occur. Special attention should be given to manipulation during the heat-treating operation; more failures result from improper handling than from incorrect temperatures. Cleanliness and order are absolutely necessary in the hardening room.

Preheating

When heating for forging, normalizing or hardening, the part should always be preheated, unless it is small and of uniform section, or if it is enclosed in a box or pipe.

Forging

In forging or rolling, the steel is heated to a temperature within the recommended range. The temperature of the steel at the time forging or rolling is completed is known as the finishing temperature. The basic principle is to heat to a temperature which will permit the steel to be finished at the temperature specified and without overheating during any

REAMER	No. Pcs.	Steel	Date
	297	86A3	6-16-42
S.O. 710-442D-5A			
Dwg. T 8004931 G1 Heat-Treatment			
Heat section to be hardened in Induction Apparatus			
Loi 7#1 Side-S Front-H Dia. 7-12.6			
Power Tap #1 Time-7 Seconds			
Quench - Water			
Temper - None			
Hardness Check	Section A-A- 62-65 R.C.		
End -	65-68 " "		
Remarks	Gore- 20-21 " "		
Satisfactory			
(OVER)			

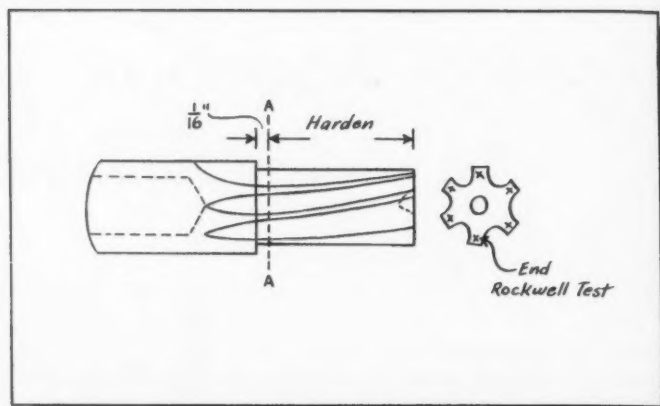


FIG. 1—When selective hardening is desired, it should be clearly indicated by drawing or sketch preferably accompanied by card information such as is illustrated

part of the operation (Fig. 2).

After forging, cool the steel in as uniform a manner as possible, out of contact with moisture or cold air. Steels with a tendency to air-harden should be cooled in some retarding medium, such as dry ashes, lime, or mica dust (Fig. 3). Always anneal as soon as practicable after forging.

Annealing

Tool steel is annealed for various purposes and in many dif-

ferent ways. This has given rise to such vague terms as full anneal, process anneal, etc. Broadly speaking, however, two general methods—full anneal and process anneal—will serve all purposes.

Full anneal is used mostly by the producer of tool steel after forging or rolling. The purpose is to develop the correct structure in the steel, not only for machining but also to insure best response to subsequent hardening operations. The tool steel con-

sumer will have little occasion to use this method unless the steel is rolled or forged after receipt from the manufacturer. As the name implies, the steel is heated to above its critical temperature and, therefore, must be cooled slowly, else hardening will occur. Hence, the practice of enclosing in boxes and pipes, and cooling within the furnace.

In recent years it has been found advantageous to arrest the cooling at some definite lower tem-

FIG. 2—Tool steel should be heated (background) to a temperature which will permit the steel to be finished (foreground) at the temperature specified and without overheating at any part of the operation.



perature and to hold at this temperature long enough for the annealing action to take place. The boxes or pipes may then be removed from the furnace and allowed to cool in any convenient manner. As compared with the old method of cooling the steel all the way down in the furnace, the new one gives substantial savings in time and in upkeep cost on the furnace.

Process anneal is employed either to soften material which has previously been hardened, or to remove the internal stresses and other undesirable effects of such operations as welding, hard surfacing, machining, cold hobbing, coining, stamping, bending, drawing, forming, punching and shearing. All this can generally be accomplished by the same procedure, which may be outlined as follows:

Pack the steel, surrounded by the correct protective material, in a suitable container. Heat to specified temperature (generally around 1300 deg. F) and hold for the indicated length of time. Remove the container from the furnace and allow it to cool, and then remove the steel. If softening only is desired and the resulting scale, warpage and internal stress are within permissible limits, the steel may be heated and cooled without protective enclosure, at some savings in time and cost. However, in case of doubt, it is always best to pack-anneal.

Hardening

In hardening, always preheat unless the tools are small and of uniform section, or unless they are pack-hardened. There are specific directions for each steel, and these should be followed.

Tempering

Slow, uniform heating and accurate temperature control are especially necessary when tempering. Unless otherwise specified, always hold one hour at temperature and cool in still air.

Quenching Media

Water, brine, oil, and air are commonly employed as quenching media with different tool steels, the one employed depending on the particular tool steel involved. Be sure to check on just which quench should be used—a water-hardening steel should not be quenched in oil or air.

In general, it can be said that

water should be used for quenching the water-hardening steels with forced circulation; brine for still-quenching the water-hardening steels; oil as a milder, non-deforming quench; and air as the mildest quench.

Water used in connection with the quenching fixture or flush should be city or well water, not raw river water.

Use brine for still or tank

ium, tools made from air-hardening steels should be suspended from hooks whenever possible while cooling. Otherwise, set on a grid or screen so as to allow free circulation from beneath.

Protective Media

If controlled atmospheres are not available or not used for heat treating tool steels, then ordinary carburizing compounds, pitch



FIG. 3—Steels with a tendency to air-harden should be cooled in some retarding medium. Here mica dust is being used.

quenching. In making up the solution, use 0.8 lb. of table or rock salt per gal. of water. Quenching brine should always be maintained within the following limits: 8 to 10 per cent by weight; 1.056 to 1.071 specific gravity; and 60 to 80 deg. F. temperature for use.

Oil should be a light mineral oil, with a minimum flash point of 350 deg. F., a fire temperature of 390 deg. F., and a viscosity of 100 sec. Saybolt at 100 deg. F. The oil should be used between 100 and 150 deg. F. (Fig. 4). Never agitate quenching oil with compressed air and never allow it to become hotter than 150 deg. F. Have the oil filtered or reconditioned if it becomes viscous or dirty.

When air is the quenching med-

coke, or cast iron chips will serve practically all purposes. The carburizing compound and pitch coke may be used over and over again indefinitely, but should be occasionally screened and the dust discarded. When pitch coke is used, always fill in around the steel with used material, adding the new material on top where it cannot come in contact with the steel. Cast iron chips must be clean and dry, and should be used only once. Tools will come out smoother if they are first wrapped in plain brown paper before placing in the cast iron chips.

Pitch coke is non-carburizing (neutral) to most steels in the temperature range 1650 to 1950 deg. F. Below 1650 deg. F. it is strongly decarburizing and should



Fig. 4—A light mineral oil is the proper quench for certain steels.

not be used. Above 1950 deg. F. it will blister and destroy the steel.

Carburizing compounds may be used in the temperature range 1100 to 1875 deg. F. However, they increase the carbon content of the surface of the steel, at temperatures above the critical (1875 deg. F.). This is not generally detrimental. On drawing dies, forming dies, lamination dies, etc., it may, in fact, prove beneficial. However, it should not be used when maximum toughness is required, or when the design of the tool is such that breakage or chipping of the edge may occur. It should never be used for the high

speed² or hot work classes of steel.

(2) — This applies to cutting tools. Punch press dies made from high speed steel may be hardened in carburizing compound.

In some instances, it is necessary to protect only the die cavity or the working edges. In such cases, especially if time is important, it may be advisable to use boric acid as a protective coating. The tool or die is warmed up to approximately 1100 deg. F. and then sprinkled with the boric acid. It is then charged directly into the hardening furnace and heated to the proper temperature, and

quenched in the usual manner. In heating, the boric acid melts and forms a protective coating over the surface. When the tool is quenched, the molten layer of salt is thrown off, leaving a clean, bright, and hard surface. This method is not recommended for temperatures over about 1850 deg. F. It works better with water-hardening than with oil-hardening steels.

Temperature Measurement

When steel is packed for heating, place the end of an asbestos covered thermocouple in a hole in the piece of steel nearest the center of the load. The object of inserting a thermocouple bead into the metal is twofold. First, if this is not done, the couple being very light, will be heated more quickly than the heavier pieces of steel and will therefore give a false indication. Second, the packing compounds may have a detrimental effect on the couple metal. If a suitable hole is not available, drill one in a piece of cold-rolled steel and insert the bead of the couple in the hole. Place the piece of steel as nearly as possible at the center of the box or load. Connect the ends of the couple to a recording type of pyrometer. By so doing, the guesswork will be taken out of pack heating and more uniform work will be produced.

Pack heating should, if possible, be carried out at night in order to save time and power and take advantage of lower rates for off-peak power, if such are in effect.

Inspection

All tools should be inspected for hardness before leaving the heat-treating department. If cracks are suspected but not clearly visible, then the magnetic crack-detector should be used. On expensive, intricate, or fussy tools, it is well to check for straightness and dimensions both before and after hardening.

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FRANK E. FLYNN, district manager, Republic Steel Co., Warren, Ohio, newly elected president, Association of Iron and Steel Engineers.

Steel Engineers Discuss Problems Posed by War

THE country's iron ore mines are doing an excellent job in meeting the tremendous requirements of the nation's steel mills, but the specter of a labor shortage has already threatened mining operations and it is only a question of time until the actual mining of ore will be affected, M. D. Harbaugh, vice-president, Lake Superior Iron Ore Association, Cleveland, told Iron and Steel Association members at Pittsburgh recently during the annual meeting and conference. His paper was read by W. H. Collison, coke plant superintendent, Great Lakes Steel Corp.

According to Mr. Harbaugh, estimated requirements of Lake Superior ores in 1943 will approximate 100,000,000 tons on the basis of furnaces now in blast and those which will soon be completed. However, ore requirements from other districts have also been increased substantially.

These tremendous requirements and responsibilities, however, are such as to cause some operators to be very apprehensive about the manpower situation. The draft and other war jobs have already made inroads upon the mining personnel and this situation will be watched closely as production figures are announced from time to time.

Since the beginning of 1941, Mr. Harbaugh said, 24 large new blast

furnaces have been built or are now under construction or are authorized to be completed by the end of next year. Of these nine are in areas depending upon Southern and Western iron ores.

Lake Superior ore mines, the speaker said, are being crowded to capacity and new mines have been and are being opened. This coming winter will see unusual activity in stripping of overburden for increasing open pit operations, and in mining and development work at underground mines. It was said that beneficiation of the submarginal ores most amenable to concentration by washing and gravity methods has expanded rapidly.

The total output of concentrates from submarginal ores in 1941 was almost 15,000,000 tons. This is 50 per cent greater than was produced in the highest prior year and in 1942 output will be considerably greater than 1941 production.

According to the speaker, 300 American and 30 Canadian ore vessels have been in service this year for the ore movement and five new vessels of one company will be in operation by the end of this season. The next season will start with 10 more vessels and six others will be in service by mid-summer.

N. J. Magnetites Being Pushed

Important additions to iron ore capacity are under way in New York and New Jersey which will nearly double the output of the Northeastern district, Mr. Harbaugh stated. The ore in this dis-

trict is mostly magnetites and some of the output is high grade lump badly needed for open hearth use while the rest is high grade sinter. These ores serve to relieve some of the burden from Lake Superior ores since they move in part to furnaces otherwise dependent on Lake Superior ores.

Touching on other expansions, the speaker said that eastern Wyoming increases in ore capacity are under way to supply increased Colorado furnace requirements. It was said southwestern Utah is also stepping up production and shipping to Colorado and will soon supply Utah.

In southern California a new blast furnace and integrated steel plant in that state will be completed in a few months and will be supplied from one or more sources of iron ore available in that general region. In Texas two new blast furnaces will be put into operation next year, the first furnaces in that state, and which will be supplied largely from the surface limonites of Northeastern Texas and one in part from Mexican ores.

Missouri is supplying some ores to the revived furnace operations in the St. Louis district which, however, rely mainly on all-rail ore from the Lake Superior regions. Alabama reserves, the speaker said, are enormous and next to Lake Superior represent the most important ore reserves of the nation. These will furnish the expanded blast furnace activity in that state.

While there has been considerable talk about "business as usual,"

J. S. Knowlson, vice-chairman of program determination, WPB, told iron and steel engineers that the country should pledge itself from now on out to "business as usual" and make its "business as usual" the business of total war. Touching on a reversal of policy necessary to win the war, Mr. Knowlson said: "Through the past 20 years we, with our economy of surplus, have been endeavoring with all the arts at our command to persuade our people to be dissatisfied with what they have, to work to increase their ease and creature comforts, all of which we said meant raising their standard of living. During these years, our enemy living in lands of scarcity, have been toughening their people, teaching them to go without things, encouraging them to walk, exercise, and instilling in them a belligerent, offensive spirit."

End of Pollyanna Period

Taking an optimistic slant as to the ability of the American people to conform to an all-out war frame of mind, Mr. Knowlson said, "I think there are indications that we are close to the end of the Pollyanna period, and that we are gradually seeing the facts that have been staring us in the face. We now know we are 'behind the eight-ball'

R. D. McGIFFERT of the Industry Salvage Committee (third from left) who predicts a fall-off in operations within the next six months if needed scrap is not forthcoming, shown with Lieut. J. L. Stone, U. S. N.; Major George Knode; and C. L. McGranahan, assistant general superintendent Pittsburgh works, Jones & Laughlin. Bud Scott photo.



New A.I.S.E. Officers Elected

• • • New officers elected by the Association of Iron and Steel Engineers at its Pittsburgh convention recently are:

President—F. E. Flynn, district manager, Republic Steel Corp., Warren, Ohio.

1st Vice-President—C. E. McGranahan, assistant general superintendent, Pittsburgh works, Jones & Laughlin Steel Corp.

2nd Vice-President—J. L. Miller, assistant combustion engineer, Republic Steel Corp., Cleveland.

Treasurer—J. S. Murray, electrical engineer, Follansbee Steel Corp., Follansbee, W. Va.

Secretary—F. H. Dyke, superintendent, blooming, bar, and hot strip mills, Wheeling Steel Corp., Steubenville, Ohio.

and that we are going into a real war business, the most brutal and oldest business of all. Those in industry must concentrate on a single job of the production of goods of war and those goods alone. The WPB, whose day by day planning represents a growing appreciation of the fact that this is a business in which the best professional talent is required, is pledged to see that nothing comes ahead of the fighting necessities of our troops and those of our Allies."

Washed Coking Coal Needed

The washing of certain coals, especially those coming from mechanized mines in southwestern Pennsylvania, West Virginia, and parts of Ohio, will result in a great-

er output of pig iron, William S. McAleer, McNally Pittsburgh Mfg. Corp., told blast furnace operators at the association meeting. The speaker said that because of wage rates and labor shortage engendered by war activities, increased mechanization in coal mining was bound to result. Because of this the speaker said a considerable amount of coal will be higher in ash and sulphur than hand mined coal but if properly washed would produce a coke of sufficient quality to eventually raise pig iron output.

The speaker presented several sets of figures, indicating the difference in quantity of ash and sulphur as between washed coal and unwashed coal. Some plants, he said, had increased pig iron production as much as 15 per cent, while some were easily able to increase pig iron output as much as 8 per cent by coal washing. It was said that the washing of fine coal would result in maximum pig iron production in using coke from that coal as blast furnace fuel. Obviously the speaker was talking about the washing of coals which contain considerable sulphur or ash, either because of inferior grades of coal veins, or coal which was received from mines which were heavily mechanized, the latter cases including those where clay might be scooped up with the coal. Generally speaking, it was said that a 1 per cent reduction in coal ash would eventually mean an increase in blast furnace output of 5 per cent.

Because of the shortage in metallics, Mr. McAleer's talk was greeted with considerable interest and the discussion that followed was more or less restricted to methods and experience in washing the particular types of coal to which the speaker made reference.

Electrolytic Tin Plate

In discussing electrical equipment for electrolytic tin plate lines, J. H. Hopper, industrial engineer-

ing department, General Electric Co., said that 14 of the 26 new lines should be in operation before the end of this year and most of the others early in 1943. It is reliably estimated, the speaker said, that 50 per cent of the tin plate made in the United States in 1943 will be electrolytic and referred his audience to T. W. Lippert's article in the April 30 issue of *THE IRON AGE* for a general discussion of the entire subject.

It was said that in these times of shortage of critical materials, manufacturers should do as much as possible to conserve them without sacrificing performance. Mr. Hopper sighted a few ways to get more horsepower per pound of electrical equipment, namely, the use of high speed motors in m.g. sets; the use of standard open type machines; the use of 15 per cent service factor on 40 deg. rise machines; the use of standard open type d.c. control panels; and the use of standard full voltage a.c. starters without special enclosures.

Rectifiers vs. M-G Sets

In discussing economies and floor space, it was said that on several plating installations now being made, some changing of the heavy copper buses could be affected by taking advantage of the fact that rectifiers can be mounted on a balcony or other structure right along the plating tank proper. In discussing the advantages of rectifiers over low voltage m.g. sets, the speaker claimed there was a saving in maintenance, in total floor space required, in installation costs, as well as a greater flexibility.

Those in the steel industry who are saying that women cannot be used, are blind to the necessity of the times, Russell J. Greenley, industrial relations department, Carnegie-Illinois Steel Corp., told association members. The employment of women must be planned with consideration of every element but they must be used in view of the number of men which will be inducted into the armed services. His company at the present time, aside from replacing men in many occupations such as metallurgical, chemical, etc., are training women to operate the lighter cranes.

Training Techniques

In the present effort, Mr. Greenley said we cannot depend upon the old method of training by absorption but included the five basic types of training which may now



FROM left to right, W. C. Oberg, manager of operations, Carnegie-Illinois Steel Corp.; Sir Robert Sinclair, deputy of the combined American-British War Production Board; J. S. Knowlson, WPB vice-chairman; and J. E. Lose, vice-president in charge of operations, Carnegie-Illinois, who toured the Pittsburgh district steel plants, including the Irvin works of Carnegie-Illinois. Jim Klingensmith photo.

be used as follows: Trade extension education; apprenticeship training; job training; learner training, and supervisory training. The speaker warned that to plan intelligently the selection of new employees, labor released by industry closed due to lack of material, should be looked over closely for excellent potential personnel. A second important source of labor, it was said, is found among companies' own employees in the form of unused skills.

Palm Oil Substitutes

Under existing war conditions, with the disappearance of domestic supplies of palm oil in sight, mill operators are on the lookout for a replacement which may eventually prove better than palm oil, Maurice Reswick, lubrication engineer, Standard Oil Co. of N. J., pointed out in a paper on roll oils and coolants for the cold mill.

Mills using the closed circulating system for cooling and lubrication, involving not more than 5 per cent palm oil in the solution should not have a difficult problem in finding a replacement among domestically

available emulsifiable fats or proprietary chemical compounds. But mills using the dual system of water for cooling and roll oil for lubrication are facing a real problem. Not the least phase of this problem is any change in procedure and application of the roll oil from the established practice. The line of least resistance is obviously a product which in its physical properties resembles that of palm oil.

Recovery of palm oil replacements of the type mentioned, which approach palm oil in their physical properties, is simpler than for 100 per cent palm oil, Mr. Reswick said. Being synthetic products, they do not vary in quality, and the ingredients may be chosen so that they will not undergo chemical changes in the mill to the same extent as the natural product. Essentially, all that is required is heating to settle out the water and coarse foreign particles, and centrifuging, if desired as a refinement, to remove the finer particles of mill dirt. The clarified product is then ready for re-use on the mill.

Other types of roll oils and cool-

ants in current use on representative mills were classified by the speaker as follows:

1. Straight mineral oils in the range of 50 to 200 sec. Saybolt viscosity.
2. Mineral oil compounded with animal and vegetable fats.
3. Soluble emulsions with water.
4. Soluble oils and palm oil emulsions.
5. Straight palm oil, heated.

The particular system used depends upon the original design of the equipment, type of work done and in a very large measure on the preference of the mill operators. Heretofore, mill operators were not over-enthusiastic about palm oil replacement, so long as they thought an abundant supply of palm oil was available, a condition that no longer exists.

Welding Metallurgy

In a paper on welding metallurgy, W. G. Theisinger, director of welding research, Lukens Steel Co., pointed out that welding and steel making both make use of the melting, casting, solidification and heat treatment of steel, and the variables in either process are common to both. One of the main dissimilar-



C. L. McGRANAHAN, Jones & Laughlin Steel Corp., was advanced from 2nd to 1st vice-president of the association.

o o o

ities, however, is the type of "mold" that each employs. The steel maker selects a mold wall great enough in

thickness so that he will prevent the adherence of his molten metal to the mold wall. The welder, on the other hand, must make certain that he does adhere firmly to his mold, which is the base metal being joined together. In the welded fabrication of heavy plate this fact must be given special attention. Otherwise, the weld will fail during fabrication or service.

The metallurgist has an opportunity to make use of alloying elements in order to obtain the desired physical properties of the deposited weld metal. This may be done by the alloy content of the electrode or to a lesser degree by the pick up of such elements from the base plate. For such uses as low temperature or high temperature service, the same alloying elements used in steel plate may be adopted for the weld, namely nickel or molybdenum.

On the other hand, in the welding of clad steels care should be taken to prevent any dilution of the cladding metal into the weld of the base metal for structural reasons. In like manner, but in order to maintain the corrosion resistant properties, dilution of the base metal into the weld of the cladding should be kept to a minimum.

Brush Polishing Eliminates Stress Concentration Points

A NEW polishing brush has the unique job of increasing the safety of fighter planes by eliminating certain stress concentration points on metal surfaces. Its development was announced after an analysis of 70 airplane crashes occurring in the United States over a period of several years.

A study of these crashes revealed they were largely due to failure of some moving or vibrating part in the plane. Reports made by the Bureau of Standards and by the Battelle Memorial Institute were carefully studied by R. O. Peterson, the Osborn Mfg. Co., Cleveland, convincing him that in most instances the essential cause of the crash could be attributed to the existence of stress concentration points on the metallic surfaces.

These points may be nothing more than sharp scratches or nicks on the surface, not much more than 8 millionths of an inch deep. They may be tiny burrs or grooves left in machining. When stress, especially that due to high frequency vibration, is placed on a machine

part having one of these defects, the stress is generally concentrated there.

In one of the 70 crashes, a propeller blade had broken. The break occurred at the shank portion, which had been rough machined but never polished. Rough tool marks had been left on the surface in that region. This was the location of a stress concentration point that started the break which led to the crack-up.

The investigators found that ordinary polishing would eliminate these points satisfactorily, if they were in accessible places, but many surface areas that required polishing could not be reached by ordinary polishing equipment. More flexible tools were required.

After experimenting with a variety of materials, engineers of the Osborn company developed a brush of tampico fiber from the Mexican istle plant which met with the approval of Army and Navy inspectors.

The brushes which the Osborn company makes from tampico fiber are rotating brushes in the form of cylinders or flat disks. They are

given a unique treatment with a special form of stiffening liquid to prevent their fluttering while in motion. The polishing material used with the brushes is usually a very finely powdered alundum, fine enough to go through a 240-mesh screen, and suspended in a suitable pasty material.

The polishing accomplished by means of the brush eliminates stress concentration points much more effectively than other polishing devices, the company states, adding that a connecting rod that would have required a day to polish by ordinary means a year ago can be polished in half an hour with the assistance of a tampico brush.

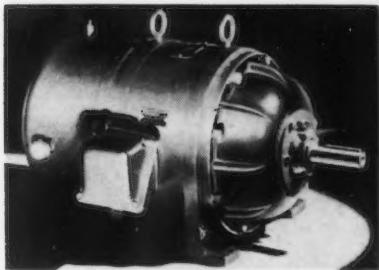
The tampico brush does not impart as high a luster that given by other polishing devices, but the surface is more suitable for machine parts. The finish is so uniform that a special instrument is necessary to test the irregularities. Inspection is made by a specially trained observer who makes use of ability of reflection to detect with his naked eye irregularities on the order of 8 millionths of an inch.

New Equipment . . .

Motors & Controllers

Recent developments in motors and controlling equipment for industrial plants and factories are described herein.

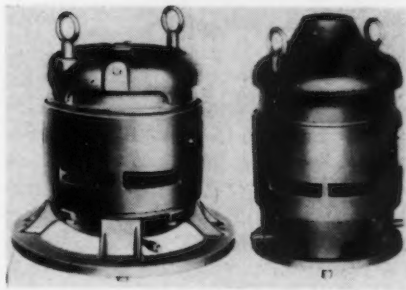
A NEW line of polyphase induction motors in sizes from 1 to 20 hp., NEMA frames 203 to 326 inclusive, suitable for use under magnesium dust conditions has been announced by the *General Electric Co.*, Schenectady, N. Y. These motors are totally enclosed, with a non-ventilated construction in the smaller ratings and a fan-cooled construction above 2 hp.



Simple cast iron end shields, stator frames and fan housings make possible dust-tightness without complicating assembly or disassembly. Other features of the new line include non-sparking bronze external fans, relatively straight and smooth external ventilating passages to facilitate cleaning, permanently sealed-in leads, and a rotating labyrinth seal at the shaft opening.

Tri-Clad Motors

THREE new motors—a vertical general purpose polyphase motor, a vertical shielded polyphase motor (1 to 20 hp.) and a vertical shielded single-phase motor (1 to 5 hp.)—have been added to the *General Electric Tri-Clad* line of motors. The cast iron frame and cover of the general purpose motors are designed to give added protection to electrical parts, without adding materially to the overall height. All openings in the motor are shielded to bar the entrance of chips or other falling objects. The polyphase shielded motors are



available in either solid-shaft or hollow-shaft construction. Both shielded types are for normal thrust or high thrust applications. These motors are suitable for outdoor operation except where extremes of moisture, dust or other harmful agents make the selection of fan-cooled motors more economical.

Revolving Field Generators

CENTURY ELECTRIC CO., 1806 Pine Street, St. Louis, now offers new compact a. c. generators, available in sizes from 7½ to 75 kva.—four, six, or eight pole, 1800, 1200 or 900 r.p.m., 60 cycle, for belt or coupling drive or flange mounting. These new generators are wound for the various standard voltages. They are built to meet AIEE and NEMA voltage regulation standards.



Tandem Timer

THE Tandem timer, introduced by the *Industrial Timer Corp.*, 113 Edison Place, Newark, N. J., is essentially a control unit with two individual and variable plug-in

type timing elements. With the timing elements adjusted to their correct respective time intervals, each cycle of operation will follow the other continuously in regular sequence. When the timer dials are once set at the time-interval desired, further adjustments are unnecessary until a new sequence is required. The control cabinet contains the "on" and "off" toggle switch, repeat and single cycle toggle switch, single cycle start push-button switch, pilot lamps, receptacles and sockets into which are plugged the two timing elements which control the single pole double throw load relays. Timing elements are synchronous motor driven, automatic resetting timers of sturdy design and construction.

Load-Center Unit Substations

NEW standardized load-center unit substations are now available in sizes ranging from 100 to 2000 kva. according to an announcement by the *Allis-Chalmers Mfg. Co.*, Milwaukee. These units can be installed anywhere in industrial plants or power distribution centers. The substation consists of a metal-enclosed incoming line section, a throat-connected transformer and a low-voltage feeder section. On the high-voltage side, potheads, disconnect switches, oil fuse cutouts, metal-clad switchgear or direct connection through terminal box can be supplied. On the low-voltage side, stationary or drawout air breakers, electrically or manually operated, are furnished. Transformers can be oil immersed, dry type, or non-inflammable Chlorextol liquid filled. These substations are available for either indoor or outdoor service. Two or more component sections shipped from the factory can be readily throat-connected at the site and power leads attached.

NEW EQUIPMENT

Indoor Current Transformer

WESTINGHOUSE ELECTRIC & MFG. CO., East Pittsburgh, announces a new standard type "CT" indoor current transformer with Hipsil core. These new transformers have a current rating of from 10 to 800 amp. primary and 5 amp. secondary; voltage ratings are 5, 8.7 and 15 kv. Definite primary terminal dimensions are set for the distance between centers of the outside terminal holes, the size of the hole, the size of the slot, the distance from the base to the under side of the



terminal and the over-all height from the mounting base to the top of the transformer. Consequently, any standard type "CT" transformer is interchangeable with any other in its voltage class, regardless of current rating.

Safety Transformer

TO reduce fire, explosions and burn hazards, the **Acme Electric & Mfg. Co.**, Cuba, N. Y., has recently developed a safety transformer to provide light for workmen who must perform their duties under conditions in which explosive gases or vapors exist. The Acme transformer is a compact portable instrument which may be easily carried about and plugged into any ordinary 110 volt a.c. circuit. It is



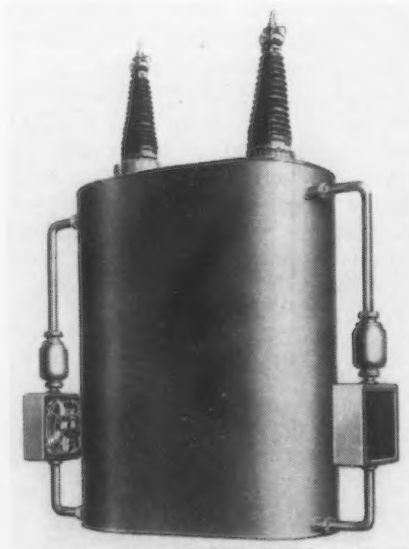
heavily insulated. Mounted in one end of the unit are dual polarized secondary receptacles for two 32 volt a. c. extension lines.

Protector for Current Transformers

A NEW protector for use on current transformers to provide protection against high open secondary circuit voltages is announced by the **General Electric Co.**, Schenectady, N. Y. It consists



of a disk of Thyrite connected across the transformer secondary terminals, together with a thermostatically operated short-circuiting switch. In operation, when the external secondary circuit becomes accidentally opened, the secondary current will pass through the Thyrite disk. When the temperature of the disk reaches approximately 100 deg. C., the thermostat switch short-circuits the Thyrite so as to prevent damage from overheating. When the temperature of the disk drops to approximately 80 deg. C., the switch opens. This secondary protector can be used on current transformers which operate meters or relays.



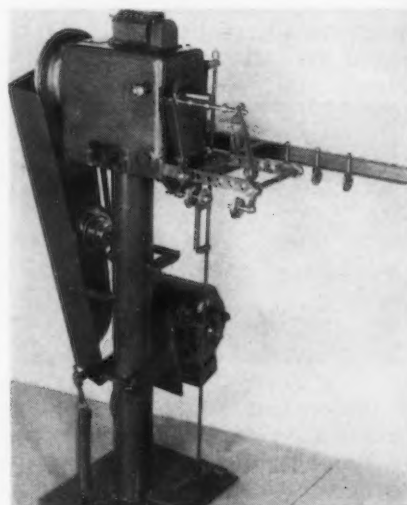
Transformer Cooler

THE "Electro-Cooler," a new cooling unit recently introduced by the **Allis-Chalmers Mfg. Co.**, will step up capacity of transformers already in service by about 20 to 60 per cent, it is claimed. This unit consists of a radiator type cooler and a special pump with mo-

tor enclosed. If the transformer has radiator valves, the unit can be installed in 3 to 4 hr. without draining the transformer oil and parts can be replaced without delay in transformer operation. The cooling units are small and usually more than one is required for each transformer. For the present emergency these units can not only be built into new transformers, but can be readily applied to transformers already in service, thus extending present transformer capacity.

Coil Winder

TO answer the present demand for a low priced winder, the **Globe Tool & Engineering Co.**, 428 Davis Avenue, Dayton, Ohio, announces the new Uni-Matic coil winder, available as a bench type, pedestal type or with bed and tail-



stock. The winder operates at various speeds from 120 to 600 r.p.m. To start the spindle, the operator merely presses a pedal which first releases the brake and then engages the clutch. An interlock allows the brake to be released while preventing engagement of the clutch. These machines are designed to wind copper wire in sizes from No. 16 to 42.

Operating Timer

WESTINGHOUSE ELECTRIC & MFG. CO. has developed a low cost time meter with a cyclometer that registers 9999.9 hr. in tenths of hours over a period of 11 years. The unit is especially designed to record the number of hours a given piece of machinery operates over a period of time. The unit is in a standard size 3½ in. diameter case.

NEW EQUIPMENT

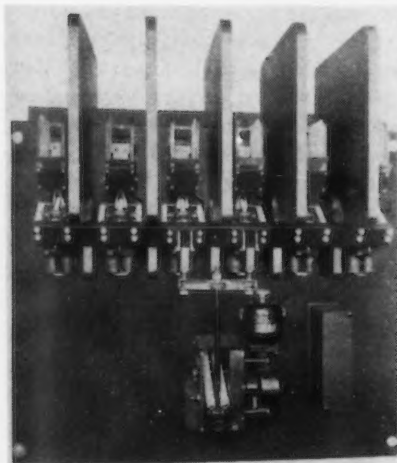


Insulating Varnish

THE Sterling Varnish Co., Haysville, Pa., has recently developed a new insulating varnish, designated as S-110, for application to electrical apparatus that must operate at abnormally high temperatures. When baked at 175-200 deg. C., it dries all the way through the deepest winding and does not resoften when exposed to high operating temperatures. The dried film is mechanically strong, exceptionally adhesive and flexible, the company states.

Air Circuit Breaker

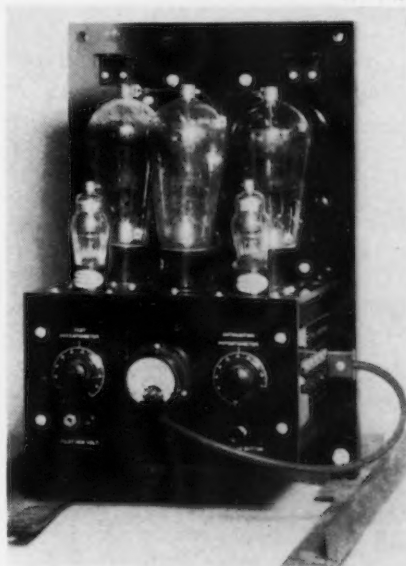
A NEW high-speed air circuit breaker developed by the General Electric Co., Schenectady, N. Y., minimizes "arc back," in d.c. rectifier units used for the reduction of aluminum and magnesium, and for various continuous processes. In large installations where a number of rectifiers are operated in parallel, current increases greater



than 10,000,000 amp. a sec. have been observed during short circuits. Such rates of rise are due to the fact that current flowing through the anode circuits of a rectifier immediately feeds into the anode circuit where the arc back occurs. Other rectifiers on the same bus will also feed into the faulty circuit. This reverse current flow must be interrupted before it reaches proportions which will cause damage to the rectifier and associated equipment. By interrupting the circuit in less than one cycle, the new AG-1 circuit breaker limits the current that can flow into the faulty anode to values of less than 50,000 amp. The breaker automatically closes the cleared circuit in about 1 min.

Electronic Voltage Regulator

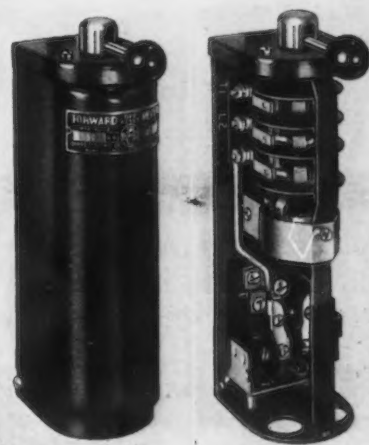
THE DT-5 electronic voltage regulator for a. c. and d. c. generators is announced by the Westinghouse Electric & Mfg. Co.



The unit operates from a three phase a. c. power supply and acts as a grid-controlled rectifier to supply the d. c. field current to the generator, or the exciter of the generator being regulated. Sensitivity is $\pm 1\frac{1}{4}$ per cent when a.c. supply voltage does not vary more than ± 5 per cent from nominal rating. The regulator is built on a micarta panel 1 in. thick and is designed for master panel mounting. No enclosing cabinet is provided but the tubes are protected by a screen cover.

Reversing Drum Controller

THE Furnas Electric Co., 447 McKee Street, Batavia, Ill., announces a new reversing drum controller with a built-in polyphase



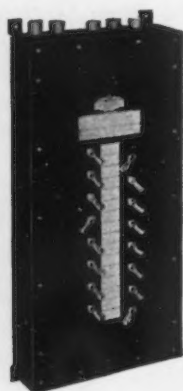
thermal overload unit. In case of an overload in any phase, power is disconnected independently of the reversing part of the controller, and an overload is signalled by a red indicator which projects through the top of the controller housing. The overload unit is of the solder pot type and is trip free. It cannot be reset and power reconnected until the drum handle has been returned to the "off" position.

Indoor Feeder Voltage Regulator

ESPECIALLY designed for feeder circuits where exacting voltage regulation requirements must be met, and liquid cooling is undesirable, a low-cost air-cooled voltage regulator for indoor use is announced by Westinghouse. Known as type SA, the regulator is intended for single-phase feeders, 2400 volts, 50 to 300 amp., and 4800 volts, 25 to 150 amp. No liquid cooling is required and winding insulation is flame resisting to reduce hazard from fire or electrical failure. Although operating on the transformer principle, the general construction resembles an induction motor, with the primary or shunt winding on the rotor and the secondary or series winding on the stator.

Dust Tight Panelboard

A NEW dust tight panelboard of the circuit breaker type has been announced by Frank Adam Electric Co., St. Louis, Mo. Instead of the usual steel front, this panelboard has a solid steel dust tight front plate, gasketed all around. The corners of the box are welded, and mounting brackets are welded



to the back of the box. Conduit outlets are dust tight welded hubs. There are no screw openings through the box. The dust tight handles operate through bushings riveted directly to the steel cover plate, and engage the regular handles on the circuit breakers inside the cabinet.

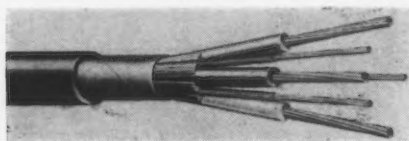
Feeder Duct

ANNOUNCEMENT has been made by the *Square D Co.*, Switch & Panel Division, 6060 Rivard Street, Detroit, of a new low reactance saflex feeder duct, designed primarily to serve as the feeder between transformer banks and main switchboards or as feeders to branch circuits where minimum voltage loss is essential. As the duct is principally enclosed in special non-critical, non-metallic insulation, the absence of enclosing steel eliminates iron losses and hum, as well as the pulsations sometimes experienced from the impact of heavy welder loads in other types of feeders. Voltage drop is only 1.8 volts in 100 ft. The duct is available in capacities from 500 to 600 amp., 600 volts or less for single phase, two and three phase, and three phase, four wire services.

Bus-Drop Cable

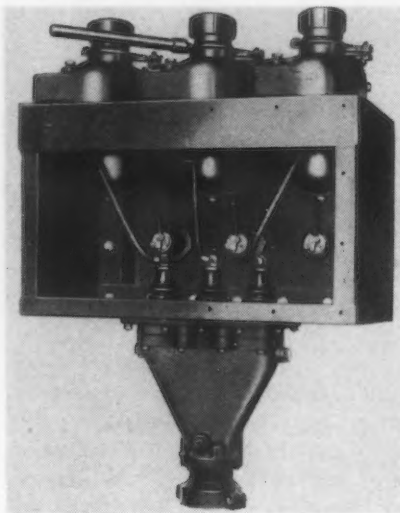
ANEW, non-rubber, flexible Flamenol bus-drop cable for 600-volt branch circuits has been announced by the wire and cable division of the *General Electric Co.* By use of this low cost bus-drop cable, connection from bus to machine can readily be made at a savings in installation time and materials. Besides using no rubber, it requires no conduit, thereby saving steel. This cable is highly resistant to oils and coolants and will not support flame. It is easy to bend and is resistant to abrasion. The conductors are soft-drawn, dry

bright annealed, stranded copper in accordance with ASTM specification for copper conductors. The three insulated conductors are twisted together with the ground wires in combination with dry jute in each interstice to provide a hard, compact core. Over this core is applied a tape and a jacket overall of the same synthetic insulation which is used on the conductors.



Oil Fuse Cutouts

ANEW metal enclosed assembly of gang-operated oil fuse cutouts for economical short circuit protection and switching for industrial equipment has been announced by *General Electric*. The assemblies permit totally metal enclosed installations, either single or three phase. Each unit is factory assembled with flexible, insulated cable leads ready for connection to either single or multi-conductor cable. The leads enter the individual cutouts above the oil level, thus preventing loss of oil. Switching requires merely throwing a lever 90 deg. Fuse carriers can be removed without disturbing the gang-operated mechanism.



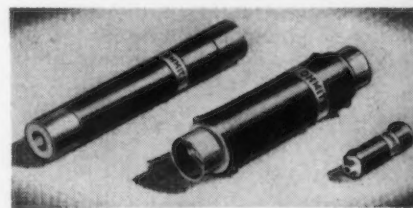
Multiple Connectors

THE *Ilco Copper Tube & Products Co.*, Mariemont (Cincinnati) Ohio, has recently placed on the market two recent developments in multiple solderless connectors. The LU4 connector holds wires

from 0 to 350,000 c.m. and LU6 holds wires from 250,000 to 500,000 c.m. Connections may be made with wrench or pliers. Utmost electrical efficiency is assured by the use of pure copper of highest conductivity. These connectors have ample contact area to carry sustained overloads.

Ferrule Type Resistors

THE Ohmite ferrule type resistor, designed for easy interchangeability without the use of tools, has been introduced by the *Ohmite Mfg. Co.*, 4835 Flournoy Street, Chicago. An even winding of resistance wire on a ceramic core is protected by a vitreous enamel coating. The wire is terminated on metal bands or ferrules which permit mounting in fuse clips. Ferrules are cup, sleeve, or cartridge type. Special ceramic cores are available which will with-



stand the temperature shock test of repeated immersions alternately from ice cold water to hot water. Protective coatings which pass salt water immersion tests are also available. Units can be supplied in a wide range of sizes.

Metal Enclosed Switchgear

GENERAL ELECTRIC CO. now offers its 250 volt d.c. air circuit breaker switchgear equipments for heavy duty in steel mills, shipyards, etc., in metal enclosed cases, assuring complete safety to personnel and equipment by eliminating the possibility of inadvertent contact with live parts. The individual breakers are enclosed in separate steel compartments, as are the control devices of the contactor. Control switches and instruments are mounted semiflush on the steel panels of the doors to the control device compartments. Arc chutes specially designed to direct gases resulting from circuit interruption lead out from the top of the structure and away from the operating area. Panels of the new equipment can be locked, to avoid tampering.

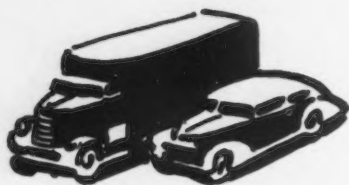


SCRAP OR JUNK— whatever you call it—the war hinges on it. Thirty thousand pounds of scrap is needed to produce just one fighting tank. America's production goal for 1942 is 45,000 tanks . . . to be increased to 75,000 tanks in 1943. You, in your plant, can help to turn the tide of battle. Idle machines, discarded tools, broken equipment are Axis saboteurs until they reach your local scrap dealer. Salvaged—they become vital links in the chain of Victory. Give someone in your plant the authority to scrap old equipment. Better "too much and too soon" than "too little and too late." Send your scrap into battle today.

ALAN WOOD STEEL COMPANY, Conshohocken, Pa.

Assembly Line . . .

• Reallocations tighten machine tool deliveries; cutting tool problems to intensify . . . New Auto Council scrap program is indefinite, and hinges on replacement parts output . . . Parts output nucleizing talked.



DETROIT—Even though the bulk of machine tool ordering may have passed over its peak, tightness in deliveries appear to be increasing. Several factors are involved in this situation; lend-lease shipments abroad and reshuffling of allocations are the most important of these.

The shipments abroad are seen as partially the outgrowth of recent conversations between Donald M. Nelson and the British Production Chief, Oliver Lyttleton. Realignment of output on both sides of the Atlantic was discussed at these international production conferences. The pattern of tool shipments abroad which have now been ordered and are underway is seen as a logical outgrowth of these talks.

Most important, however, is the latest juggling of production priorities, based on end-products. In this reallocating, the facilities for aircraft and aircraft parts manufacture take very broad precedence over all other needs. As a result, orders for other arms requirements which were about ready for delivery have been shoved back quite considerably; in some cases machine tools which might have been shipped to purchasers during October may not go forward until after the first of the year.

This, of course, results in a considerable disarray of manufacturing schedules and planning. This, however, is but one phase of today's manufacturing problems. When it finally approaches equilibrium, competent sources believe

that shortages of cutting tools will impair overall output. Insiders in this machinery supply picture are greatly concerned over the cutting tool picture as it may develop very soon, for, as plants reach production rate, their requirements for cutting tools will rise steeply. Current supplies are hardly adequate, and the enlarged needs in sight are nightmarish to the cutting tool suppliers.

UNDERLYING all such problems, of course, is the continuing shortage of steel. Detroit industrialists hear that recent substantial allocations of steel for shipment abroad under Lend-Lease are continuing without diminution right through the end of the year.

Being prepared for early volume production, meanwhile, are several brand new projects which cannot be specifically discussed due to censorship restrictions. Very important preparations are going forward for the output of a greatly increased number of automatic controls and gyroscopic equipment for aircraft, and for an equally enlarged quantity of diesel engines.

A number of companies hitherto unidentified with the aircraft subassembly picture are going into gyroscope and other production related to automatic piloting.

The diesel engine picture envisions new operations in at least two converted plants; in one of these cases the forthcoming output will utilize much available and presently idle motor manufacturing equipment.

Although uses for these diesel engines have not yet been specified, there is some indication that they will be largely installed in landing boats. Preparations of this sort may constitute concrete indication that an invasion of Europe lies ahead.

ALSO in the "brand new" category is another engine for medium tanks which may be ordered soon into production. If employed, this power plant would be the second built along automotive specification patterns, turning up the required horsepower without utilizing premium fuel, and manufactured in considerable proportion with existing production facilities.

Details of the broadened scrap program of the automobile industry, referred to here two weeks ago, have now been made public. The Automotive Council for War Production has recommended to members that they scrap all tools, dies and fixtures for manufacture of replacement parts where demand indicates that such equipment is no longer necessary to maintain essential transportation by car and truck.

Obviously, this is a general statement and purposely so. The intent of the Council was to make its program broad enough so individual members could democratically apply it to themselves as they saw fit and necessary.

Some interpretation of the policy is that it constitutes a gentle recommendation to all members to build up inventories of replacement parts for all models to the point where the dies and tools therefor could be scrapped. This, of course, would ultimately lead to complete scrapping of all equipment right up to 1942 models. But there are obstacles in the way of this. The chief of these may be inability to obtain materials to fabricate suitable banks of replacement parts. Another obstacle would likely be the manufacturing limitations raised against replacement parts output by various government regulations, regardless of the availability of materials.

THE new industry policy ties in neatly with the nationwide drive for dormant scrap announced by WPB before a salvage committee meeting of the Automotive Council. This program is directed at more than 70,000 American industrial firms which have been asked to inspect their plant properties, to list unusable equipment, machinery, dies, molds, jigs, fixtures, etc., and to dispose of them before Dec. 31. Here, too, a general policy has been set up: if the equipment has not been used for the last three months, or is not scheduled for use during the coming three months, a use should be found for it or it should be scrapped.

At the time this policy was announced, it was explained that it applies only to dormant scrap incapable of current or future use be-

Tool Conservation begins in the Tool Crib

A PLACE FOR EVERY TOOL...

In the conservation of tools, their proper care in the tool crib is just as important as their proper use. Tools misplaced, lost or damaged through poor housekeeping methods are out of production just as completely as those worn out or broken on the machine.



Note the conspicuous aisle and section locating discs, and drawer numbers. Corresponding symbols on the requisition, copied from a card index, enable even new employees to locate unfamiliar tools quickly.

Photo Courtesy Pratt & Whitney Aircraft



and EVERY TOOL IN ITS PLACE

Increased production schedules mean more calls at your tool crib windows with a probability of more delays in handling "Window Traffic". Systematic layout of aisles, shelves, drawers and compartments will assure that every tool is where you want it when you want it.

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GTD GREENFIELD

TAPS - DIES - CAGES - TWIST DRILLS - REAMERS - SCREW PLATES - PIPE TOOLS

The direct labeling method is handy for departmental cribs or for the small shop.

Photo Courtesy American Bosch Corp.

cause it is broken, worn out, irreparable, dismantled, or in need of unavailable parts necessary for practical reemployment in the war effort. Government officials said the policy should not be construed as applying now to reusable machinery which can be employed to contribute directly to the war effort or which, to strip out verbiage, will be usable in future—as in the unspecified case of 1942 model auto production equipment.

After this interpretation was made, WPB Chairman Nelson stated in Washington that all automobile machinery laid up for the duration should be used or scrapped. Evidently the fine lines of distinction which the WPB salvage officials stressed before the Automobile Council had not been entirely clarified in Washington. In fact, Mr. Nelson's remarks were surprising to many in the industry, for informed circles felt earlier that the Government had no desire at this time to junk the 1942 model production equipment which would bear the brunt of wholesale scrapping as proposed by Mr. Nelson. General automotive belief has been that Washington agreed that 1942 production equipment should be left reasonably intact, so that the output of automobiles may be resumed at the earliest possible moment after the war ends, thus relieving transitional problems of that period.

Manufacture of replacement parts inevitably becomes a consideration in any program to scrap all production equipment of pre-1942 model vintage. And the size of output quotas for the first and

second quarters of next year is said to be under study at this time by WPB.

Current quarter allotments permit production of passenger car replacement parts up to 70 per cent of the 1941 volume, depending on inventory conditions, and up to 125 per cent of last year's total for truck parts. Some anticipations are that first and second quarter totals for 1943, which may soon be announced, will provide for a reduction, probably modest, of current passenger car allotments, and an increase, also modest, over the present truck allotments.

But many automobile men think that the allotment of quotas for replacement parts is comparatively superfluous, inasmuch as the availability of materials for such output in the recent past has been insufficient to reach ceiling volume. As a result of this situation, some of the very small producers within the industry have all but discontinued replacement parts manufacture, relying upon stocks which were built up to earlier maximum levels and held.

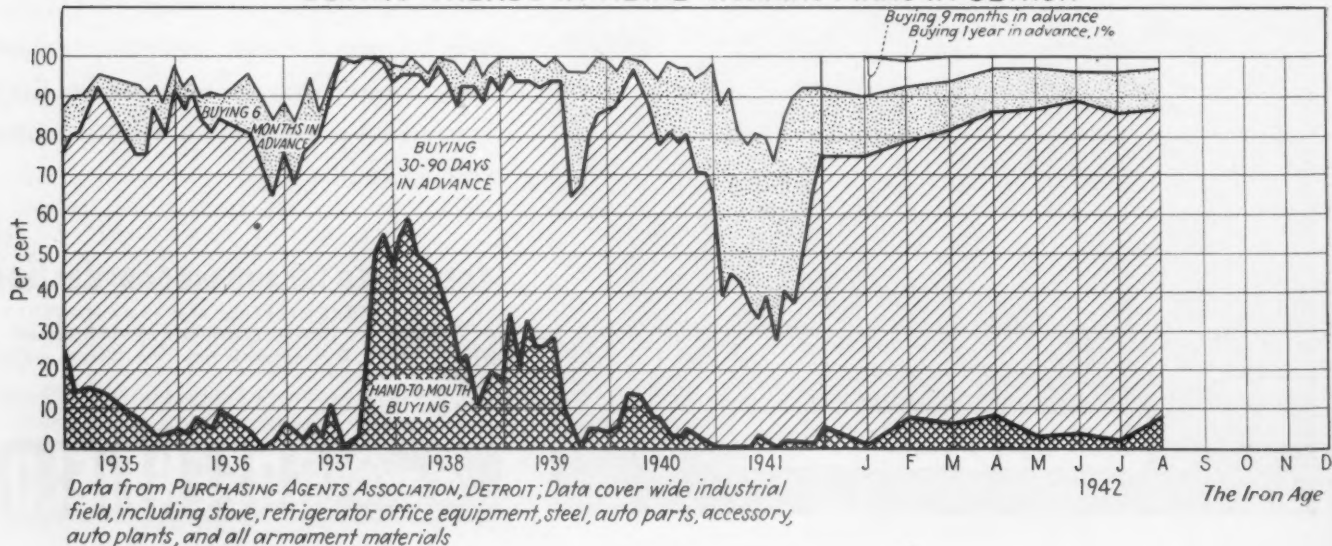
There are some grounds for belief that there may be in formulation within WPB a variation of the nucleus plan for replacement parts output. That is, all companies manufacturing the same type of replacement parts, either for jobber or dealer outlets, might be ordered to group their output in the plant of one manufacturer, as has been done in the bicycle and typewriter industries on complete assemblies. Conceivably this would

have advantages for both small and large producers. Small producers who are unable to obtain materials in the minor amounts required for their output quotas might be able to group their work with larger producers. Conversely, some of the larger makers, so loaded with war and military truck work that they are unable to release enough facilities to turn out replacement parts, might get their parts from smaller manufacturers.

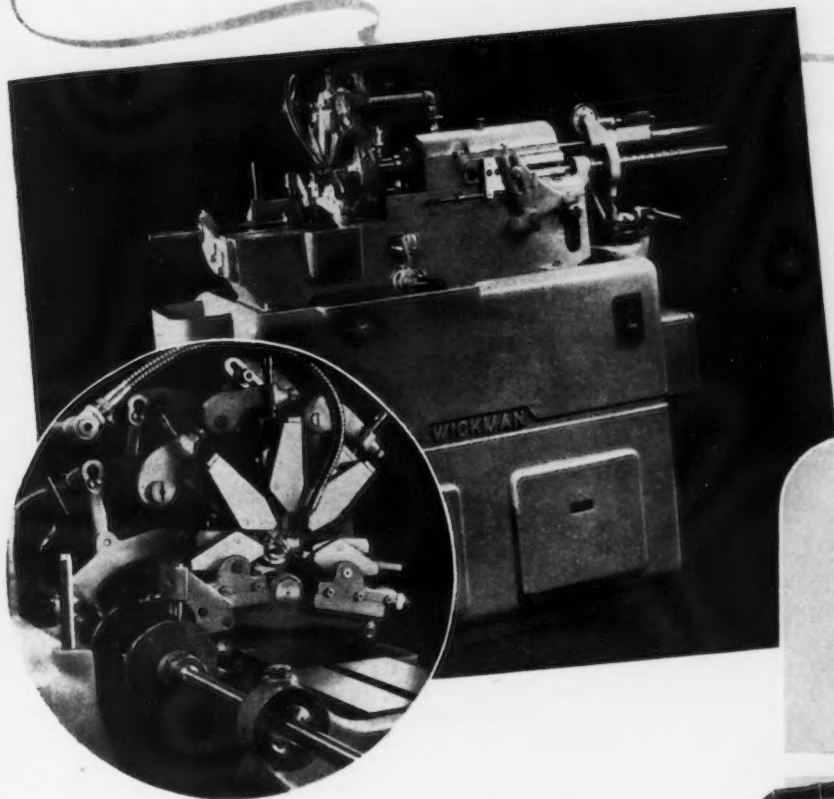
RUMOR of such a nucleus plan for replacement parts have been sporadically heard for several months and are also said to have been discussed in regard to the farm implement field. There is still nothing definite on it, but the fact that such gossip has sprung up again may be significant.

Replacement parts are at present in fairly good supply at factories, jobbers and dealers, although there are unbalanced stocks in several categories. The balancing of such stocks will be first order of business for some 50 automobile specialists now being engaged to act as field men for WPB's automotive branch throughout the country. In addition, these men will be responsible for supervision of proper maintenance of stockpiled vehicles (there has been complaint in the past that proper precautions are not being taken in many instances) and will also investigate, evidently in liaison with the Materials Redistribution Branch of WPB, inventories of parts and materials in the hands of manufacturers, distributors and possibly jobbers.

BUYING TRENDS IN METAL-WORKING FIRMS IN DETROIT



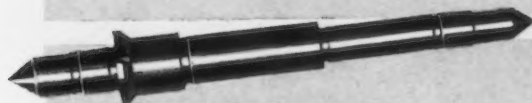
EXTREME ACCURACY—HIGH FINISH



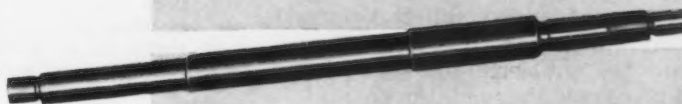
**On Work
Up to 1/2" Diameter
and 4" Length**



**Part—3/4" long—six diameters—
1/2" to 3/16"**
Material—S.A.E. 1114 Steel
Production—100 per hour
Tolerance— ± 0.0003 " on all diameters
Finish—30 to 50 Micro inches



**Part — 3" long — twelve diameters
and two pivot points between 7/16"
and 3/16"**
Material—Black—Red Stainless Steel
Production—14 per hour
Tolerance— ± 0.0003 " on all diameters
Finish—15 to 40 Micro inches



**Part—3-7/8" long—five diameters be-
tween 1/4" and 5/32", two under-
cuts, one taper**
Material—Black—Red Stainless Steel
Production—24 per hour
Tolerance— ± 0.0003 " on all diameters
Finish—25 to 50 Micro inches

Pictured in actual size are three parts, each completed in one operation on the WICKMAN High Precision Automatic. They are typical of many small, accurately finished parts which can be produced from bar stock on a high production basis.

Five individually cam-fed single point tools are employed. All tool holders are provided with both radial and lateral micrometer adjustments. By synchronizing the sliding headstock movement with the radial strokes of the tool slides, there is no limitation to the back shoulder work which can be done. 28 spindle speeds up to 7000 R.P.M. and infinite feed rates are available.

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THE IRON AGE, October 8, 1942—63

Washington . . .

• Plans for concentrating U. S. industry constantly shifts... Division of profits, trade marks, post-war positions of various companies are complications . . . British system studied.



WASHINGTON—The concentration of industry policy within WPB, outlined in THE IRON AGE of Oct. 1, is constantly shifting on the various problems connected with the move. WPB is not sure, for instance, that it will follow the British policy which frowns on complete standardization. The British say that the economies to be achieved by simplification are fully recognized but preference is for "utility models" or types produced within the limits preserved by the government, yet leaving room for the exercise of individual ingenuity. There are various conflicting views upon the problems of disturbing regular trade channels, the possibility of dominance of the nucleus firms of the industry in post-war business, division of profits and trade mark practices.

Meanwhile, WPB is proceeding with plans for the concentration of the farm machinery industry, which are said to be proceeding slowly because of the fact that there are so many firms in the industry and that the distribution setup of the larger firms must be telescoped or utilized by the smaller firms which are chosen to continue the manufacture of civilian goods. The order which is to be issued will limit the production of farm machinery by 83 per cent of 1941 output, but the percentage of cuts will not be uniform as to individual plants. The plants which will be put

in nucleus status have not as yet been selected it is reported.

The bicycle industry which has been concentrated in two factories, that of the Westfield Bicycle Co., Westfield, Mass., and the Huffman Bicycle Co., Dayton, Ohio, had production limited to 10,000 bicycles monthly. The reason given for the choice of these two companies is that they have in the past regularly furnished the Army with bicycles. The remainder of the firms in the industry are converted to a large extent to war work.

THE Westfield company, which is permitted to make 6000 wheels monthly, may place the letter "W" next to the serial number on each bicycle and the Huffman company which will make 4000 wheels may place the letter "H" next to the serial number on each bicycle.

About 126 Class C stove producers, those companies whose annual sales in 1941 amounted to less than \$2,000,000, have become nucleus plants under the concentration order issued by WPB some time ago. Class A manufacturers making \$2,000,000 or more worth of goods and Class B manufacturers making less than \$2,000,000 worth of goods and whose plants are located in labor shortage areas will hereafter make war goods or nothing. The use of

steel in stoves was limited to about 70 per cent per unit of what the manufacturer formerly used and all companies were limited to the production of a single model.

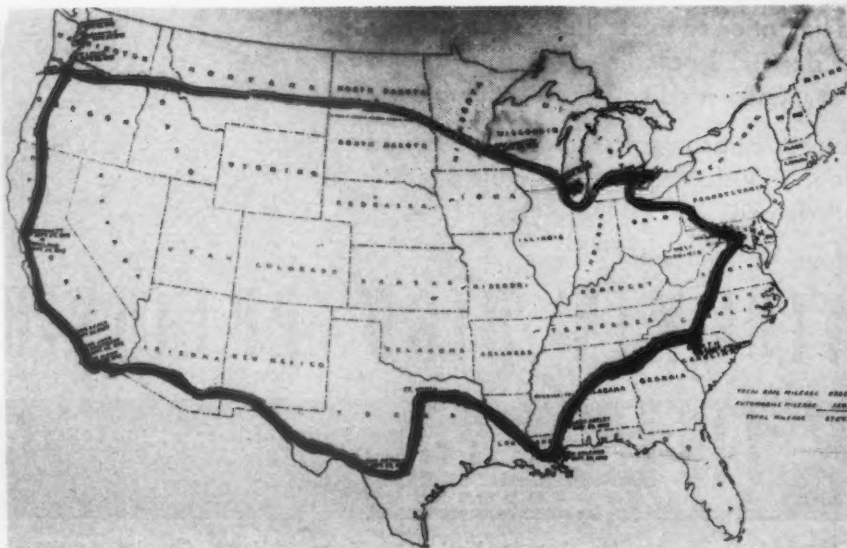
Thus far, WPB has ignored some of the problems raised by concentration in its orders. Officials have spoken of the difficulties concerning trade marks. So far no trade mark has been preserved, it appears, because most manufacturers are not proud to put their names on inferior products which do not come up to the standards of their peacetime output.

WPB says that concentration plans should not foster post-war domination of an industry by one or a few companies, yet none of the concentration orders have contained a time limitation. Trade marks are not looked upon as a problem where there has been standardization of industry products for the foregoing reasons, but a governing policy with respect to the preservation of the value of trade marks has not been adopted.

THE question of division of profits among firms concentrated and those in which civilian production is prohibited has many answers at WPB, yet no one answer. In England where industry is more cartelized than in this coun-

ROOSEVELT'S SECRET ITINERARY: This map gives the route of President Roosevelt's 8754 mile, secret inspection trip of the nation's production centers. The trip was consummated quietly while Congress threw up a smoke screen of newspaper confusion in their struggle over the Wage-Farm Price bill.

Harris & Ewing Photo



Shells IN SECONDS..INSTEAD OF MINUTES

SUNICUT helps shell plant run complete 8-hour shifts without tool change or regrind

Shells that a short time ago required minutes to machine now are produced in seconds.

At one of America's great armament plants, batteries of automatics are turning out shells on a round-the-clock schedule, running complete 8-hour shifts without a tool change or regrind, and Sunicut, the transparent, sulphurized cutting oil, is a vital contributing factor.

Sunicut was adopted at the recommendation of Sun Oil Engineers—those well-known Doctors of Industry. Its success has been phenomenal. Sunicut's exceptional heat-absorb-

ing and metal-wetting qualities permitted the increased tool life, fine finish and "nth" degree accuracy that made this production possible.

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WAR BONDS
AND STAMPS

try, compensation provided for firms closed down is limited to the duration of the concentration program, and nucleus firms produce at cost for closed-down firms which retain their sales organization. Trade marks are easily preserved under this arrangement.

Some factions at WPB think that the government should not have anything to do with fostering or supervising the division of profits on the ground that the division of profits would probably be in some cases a violation of the anti-trust laws. Other representative groups within the agency feel that the government should take limited control over the subject and invite industry to submit ideas of its own on how compensation should be worked out. The proponents of this latter idea would have all industry suggestions submitted to the Department of Justice which would give a pre-judgment on whether the scheme would tend to violate the Anti-Trust Law.

IN the stove order no compensation was provided. This order is thought by some to be the only fullfledged concentration effected by WPB. The reason the question of compensation was not



Harris & Ewing Photo

RIGHT HAND FOR NELSON: Ferdinand Eberstadt, head of the Army-Navy Munitions Board, has been named vice chairman of WPB. In his new capacity Mr. Eberstadt will directly assist Donald M. Nelson.

brought up in this industry is that it is almost completely converted to war production and that it would be

unreasonable for firms which have discontinued civilian production to expect compensation when their factories are not idle.

Before WPB announced any plan for concentration of industries which had been hit by production limitation orders, some industries had been doing the job themselves. Production quotas permitted under WPB orders have been sold, and WPB has put its sanction on some of these deals.

Louis J. Paradise, economic analyst at the Department of Commerce, testified before the Senate Small Business Committee on Sept. 29 on the benefits to be derived from concentrating civilian production in small plants as a method of meeting the problem of reduced production for civilian use. The text of his remarks on this subject follow:

"If the plan to concentrate civilian production in small plants is extended to many industries, the benefits derived will vary from industry to industry. The main reason for this arises from differences in distribution of small firms within industry groups. In some cases there are not enough small firms in existence to provide all of the civilian output permitted in the coming months. In other industries, the volume of civilian production will be so small that only a fraction of the small firms could produce the entire permitted output. For example, analysis of major manufacturing industries shows that in the case of lumber and manufactured dairy products, more than the entire civilian output expected in fiscal 1943 can be produced in very small plants employing less than 50 wage earners. The entire output of the machinery, cement and chemical industries can be produced in small plants employing less than 100 wage earners. On the other hand, in the case of four of the industries, cotton goods and rayon goods, woolen and worsted cloth and meat packing—the entire civilian output could not be produced unless large plants employing more than 500 wage earners were also permitted to produce civilian goods."

THUS far, in its orders, WPB has not given any sign that lack of power in communities or warehouse shortages have been given consideration in the concentration so far ordered.

THE BULL OF THE WOODS

BY J. R. WILLIAMS



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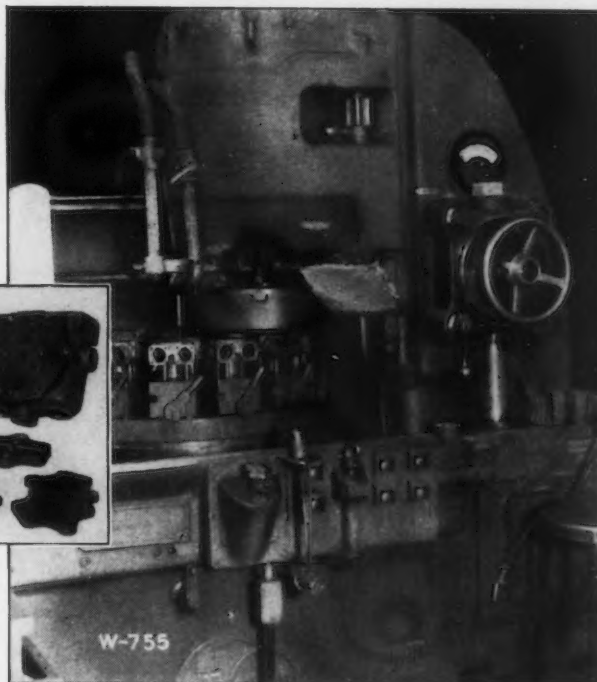
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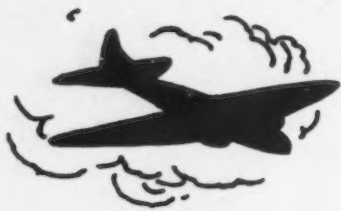
Send for your free copy of "Work Done on the Blanchard." This book shows over 100 actual jobs where the Blanchard Principle is earning profits for Blanchard owners.

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WEST COAST . . .

• Shipyard agreement intended to prevent pirating of labor . . . Other employers get no protection from its provisions . . . Workers' uncertainty over draft said to increase machine breakage.



SAN FRANCISCO—The piratical clique among San Francisco Bay shipyards voluntarily walked the deck last week with the signing of an agreement by the yards and by the Bay Cities Metal Trades Council which will, in effect, blacklist any worker who leaves his job without good reason or who is fired with good reason.

Points covered by the agreement were:

1. Workers leaving their jobs in shipyards for any reason whatever can be employed in another shipyard only upon presentation of written clearance.

2. Anyone not cleared for reemployment will be listed with every shipyard and interested unions in the Bay Area.

3. An appeal board is established with power to award back pay to workers successfully appealing refusals for clearance.

4. Reasons for refusal of clearance include loafing on the job, drunkenness, flagrant and unauthorized absence from work, early quitting, wilful violation of safety rules and sickness unless the worker is certified by a physician or examined by the employer's doctor.

Although the move resulted indirectly from the impotency of the War Manpower Commission as a job freezing body, the WMC and the Maritime Commission offered their blessing to the pact.

Two years ago such an agreement would have been impossible. No union would have tolerated such a pact, let alone sign it, and any indication that such a scheme was

in the wind would have sent the business agents yiping to the NLRB. Among the shipyard employers in this region two years ago, labor piracy was in high fashion; new yards springing from the grass roots, particularly those started by construction men without previous shipbuilding experience, were forced to spirit away experienced talent from the few established yards.

Now, the unions' gluttonous appetite for jobs has been satiated and the status of the yards is sufficiently near the balancing point so that labor is stolen back and forth rather than entirely by new yards from older ones. Only two major shipbuilding plants on the Bay are still in the pre-production stages.

WHILE the cigars were still being passed among signatories of this pact to "eliminate the migration of labor from one shipyard to another, covering new ship construction and ship repair," and the local press was singing paeans to a new milestone in industrial relations, comments among other branches of industry were not enthusiastic.

Although the Pacific Coast shipyards have contrived to make pay days extremely happy occasions for thousands of workers, by the same token they have drawn down the unbridled wrath of employers in nearly every other branch of industry. And though the shipyards in this one area have agreed to stop pirating among themselves, some employers have been unkind enough to liken it to a truce between Henry Morgan and Captain Kidd. There is no indication that the higher wages offered by the shipbuilders will cease to be an attraction to workers currently employed in lower paying industries. They deny, too, that they are over-staffed for their current rate of production, despite rumors of unfriendly origin that just as many ships could be built just as fast with about 20 per cent less men.

Ironically, there are evidences that industries producing certain materials whose lack has allegedly retarded the rate of ship construction have been held back in their production because of labor losses to the shipyards. A Seattle steel mill, faced with the problem of manning an additional furnace, has

had its labor force seriously depleted through labor leaving for higher wages or the armed forces and is now employing 17 year olds to help out. The employment of women in this mill as shopworkers seriously is being considered. Likewise, the mining and lumber industries, whose labor forces are dangerously low, have lost many of their men to the West Coast shipyards.

Incidentally, the War Manpower Commission order which forbids any non-ferrous miner to leave his job to go to another without specific permission from the United States Employment Service, and forbidding employers to hire miners who do not have certificates of separation from previous jobs has been ineffectual. Throughout the West, reports indicate that miners are still leaving their jobs. Some of them do not know that they have been frozen, and others are frankly doubtful that the ruling has any teeth. Mine operators, frantic for help, are not inclined to inquire into the employment history of any miner who applies for employment. Until some dental work is done on whatever enforcement action was intended to be taken in conjunction with the ruling, the mine labor situation remains as critical as ever. The prestige of the War Manpower Commission has not increased in the mining districts as a result of this abortive attempt at labor freezing, either.

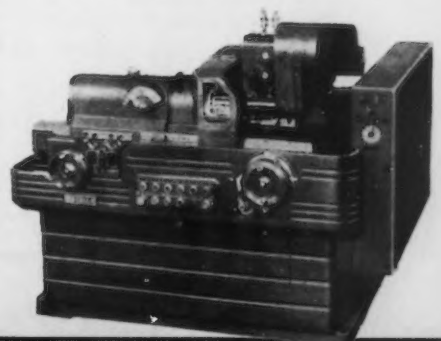
AS a practical measure in solving mine labor shortages, the rumored WPB order which will close non-essential gold mines has drawn no more than snickers. Many of the leading gold producers mine ores containing essential minerals as well as gold, and still others send their gold bearing ores to smelters where they serve as a flux for essential base metal. Many gold mines already have shut down and their crews dissipated, and others have lost a large portion of their labor to war industry other than mining. If and when the remaining gold mines are closed, there is no guarantee that their labor force will remain in the mining country to dig for essential minerals. In mining camps, the idea of closing the gold mines is generally credited to the same Washington, D. C., official who previously suggested that

...AND HOW WILL YOU MAKE THEM

If accurately threaded work is your problem, keep in mind the many advantages of Ex-Cell-O's modern thread grinding machine—*extreme precision with speed and economy in production of hardened threaded parts . . . and the use of semi-skilled operators.* The higher standards of accuracy that war work establishes today will be equally demanded when civilian needs are again in the forefront . . . an Ex-Cell-O thread grinder, on which an exceptionally wide range of work is possible, places you in a favored position to produce accurately threaded hardened parts . . . *today . . . and tomorrow.*

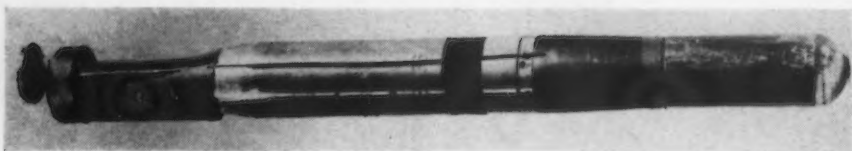
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Below: One of nine styles of Ex-Cell-O Precision Thread Grinders (Style 39-A for producing internal threads). Ex-Cell-O engineers, who brought thread grinding as a successful process to U. S. industry, are familiar with all threaded work needs.



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British-Combine Photo

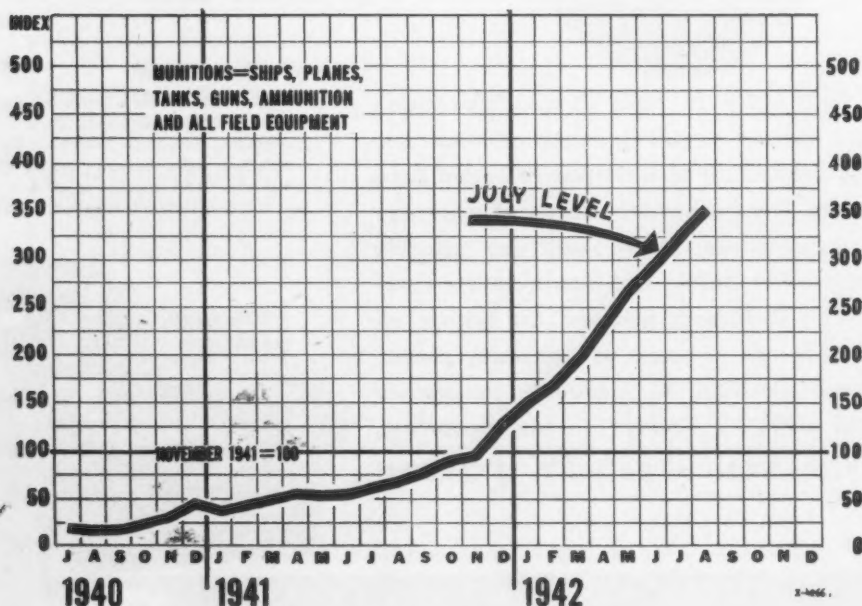
NAZI EXPLODING INCENDIARY: One of the newest weapons of the Nazi's is this explosive fire bomb. The bomb sets off its incendiary content immediately on striking a solid surface. A slow fuse then causes a delayed explosion which spreads the burning incendiary contents over a wide area.

the gold mines convert their ores to produce war minerals.

The critical West Coast labor situation is by no means confined to the basic materials industries. The labor field among the airframe and parts makers is by no means lush. A survey by the Aircraft Parts Manufacturers' Association, comprising 140 southern California companies employing more than 50,000 workers, reveals that 10 to 33 per cent of personnel has been stripped from member plants since Jan. 1. The rate of losses to the services since Aug. 1 has been so great that, if it continues, turnover for the year 1942 will reach nearly 100 per cent. Jack Frost, executive secretary of the association, attributes most of the loss to an enlistment stampede resulting from

workers' anticipation of impending draft. Selective service procedure, which grants occupational deferment upon the length of time required to train a man for a job, is blamed for some of the difficulty. A man may, in one plant, achieve competence as a lathe or milling machine operator within a year, while in another factory parallel natural abilities might not be brought to first class workmanship within two years, according to Frost, the difference lying in degree of precision required. When the man whose training has required the lesser period of time is drafted, the tendency is for the man whose training requires longer, upon learning of the draft of his co-worker to enlist.



"WE MUST ALL DO MORE:" So said Donald M. Nelson in his third of a series of war production reports, issued Sept. 30. In spite of this, our August munitions production rose 8 per cent over the July figure and the WPB Munitions Index below accordingly rose from the July high of 330 to 357 for August. Total value of munitions output plus war construction was \$4,700,000,000 for August. Mr. Nelson said "We must all do more and we must do it in a hurry."



"The picture changes so fast that workers become confused and baffled," Frost states. "A factory making military plane components informed us that defective workmanship and machine breakage has increased recently. Blame was traced to a kind of hysteria growing out of uncertainty with regard to the draft. Major General Lewis B. Hershey, director of selective service, in a telegram to the association agreed that 90 per cent of aircraft plant losses to the armed services has been through enlistment."

COINCIDENT with the first meeting of eastern aircraft plants associated with the Aircraft War Production Council, Inc., southern California plants which formed the original group operating under the Council banner announced, with Army approval, that their deliveries had increased 113 per cent since Pearl Harbor. With an obvious eye Kaiserward, they said that cargo plane deliveries have increased more than 1100 per cent. Production efficiency was said to be up 36 per cent measured in dollar value of airplanes produced per man hour of work.

Unfortunately, statistics flaunted by southern California aircraft manufacturers tend to be misleading because the base from which percentage increases is calculated is relatively small. Thus, when the eight southern California companies—Consolidated, Douglas, Lockheed, Northrop, North American, Ryan, Vega and Vultee—say that during the first six months of 1942 their deliveries were nearly three times those of the entire American aircraft industry in the full year of 1939, scarcely an eyebrow is raised by those whose memory dates back that far. Likewise, the statement that deliveries by these companies during one month of the January-July, 1942, period exceeded those for the entire American aircraft industry during the full year of 1938, likewise does not seem significant. But when the Council states that during the first six months of this year 4151 exchanges of materiel among member companies were made, and many more exchanges were made aiding non-member companies, signs are unmistakable that there has been a quickening in the industrial pulse.



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YOU'LL FIND IT WILL PAY TO **TRUSCONVEY** YOUR PLANT MATERIALS

Fatigue Cracks

BY A. H. DIX

Scrap Saga

• • • To get the trade's slant on the Pegler bumper scrap drive, we called on a scrap dealer. "What," we asked, "is your frank opinion of the automobile bumper scrap campaign?" He was trying to knock a brass collar off a short length of steel tubing, and without looking up, answered, "Never heard of it. How much bumper scrap you got?"

We said we hadn't any, adding, "You know—the Westbrook Pegler campaign." He looked annoyed and said, "Who is he? I pay 50c. a hundred. Where is it?" Finding it impossible to crack his conviction that the universe is made up of people with a load of scrap for sale, we left as he yelled between strokes, "Drive it in. Fifty cents a hundred."

We cannot say we are sorry to report failure in this departure from our practice of refusing to handicap ourselves with exact knowledge of subjects on which we comment. A straitjacket of facts can be very hampering, and we are glad to be able to discuss the bumper drive in our usual carefree way.

In our opinion it is more than slightly insane. Scrap is material that has outlived its usefulness in its original form. Even with speeds of 35 miles per hour and with driving here in the East rationed to about 40 or 45 miles a week, bumpers still serve a useful purpose. They save fenders and lives. There is something very dramatic about unbolting a bumper for scrap, and every mile driven in a bumperless car advertises the driver's patriotism, but a Saturday or two spent in collecting and helping segregate genuine scrap would be more to the point.

There is, of course, still no dearth of scrap. What there is a shortage of is labor to collect it and prepare it. Which leaves us an opening to tack a rider on our block scrap warden idea. The warden will attend classes in scrap preparation and segregation, and each Saturday or once a month, after the neighborhood scrap is collected, he will supervise the breaking up and sorting of the scrap by citizens who feel guilty playing golf in these times. The citizens who work for free need not fear that they are taking the bread out of the mouths of scrapyards labor, for with scrap price ceilings where they are, wages are necessarily low and higher-paying defense plant jobs have already taken heavy toll.

The sight of the country club set unbolting old gas stoves and swinging sledges will set a good example to those who are enjoined to stay at their machines in defense plants ten hours a day, seven days a week. Absenteeism will diminish, waistlines will shrink, hernia will increase, and morale will soar.

Odd Jobs

• • • You overlooked two good ones in your odd-job list. One of the jobs in a piano factory is bellyman. The other, in making shoes, is bottom rounder.

—Dear

Mountain Language

• • • We thought the brains department had let a typographical error slip through when we read "But the greater part of the Chinese massif has only the most primitive forms of transportation. . . ." in the Sept. 24 article (page 45) on Japan's troubles in handling her present big empire, as translated from the German *Stahl und Eisen*.

But *massif*, we learned from the big book on the Park Ave. side of the floor, is a genuine word, and means, as if you cared, a principal mountain range.

Ding

• • • Another new one to us, as used by our neighbor to the left, the West Coast section, is *dinged*, in the sentence "... cast iron propellers were dinged by rapid breakability." It hasn't reached the East yet. We suppose one of its meanings is "damned." If that isn't right we hope Osgood Murdock, your Pacific Coast ear-to-the-grounder, will let us know.

Speaking of damned, we see that the Hollywood anti-profanity code will require Charles Coburn, who takes the part of Admiral Farragut, to say "Darn the torpedoes. Full speed ahead!"

New Priority Guide

• • • This issue contains the seventh edition of our priority guide—the largest yet, 56 pages. Even before publication, the demand for extra copies of the guide doubled our mail, and we are pleasantly frightened at the prospect that even the substantial quantity we have provided will be insufficient.

If you want a few or a lot more copies you can get them at these prices:

1 to 10 copies	50¢ each
11 to 100 copies	40¢ each
101 to 300 copies	35¢ each
300 or more copies	30¢ each

With orders for a dollar's worth or less, we will be grateful no end if you will send a dollar bill, coins, or stamps.

Tract Distributor

• • • WPB has ruled that manufacturers of tract-laying tractors . . .

—From a business advisory service bulletin

Probably for use in the Bible belt.

Signatures

• • • A professor used to tell his classes, "Write your signature in the upper right corner of your paper and write your name below it." Some signatures are for exhibition and others for work.

Take, for example, the case of James W. Baxter, president of the Buckeye Forging Co., Cleveland, who boasted here recently that he writes his name legibly like this:

James W. Baxter

The other day we saw his name on a check and it appeared like this:

[Signature]

Apronym

A man named Loveless is the social disease officer at Fort Benning, Georgia.

—Frank P. Cavenagh,
Warner & Swasey Co.

Stopper

• • • Why Tuesday Couldn't Marry Thursday—General Electric Co.

Puzzles

• • • Last week's big issue was late in getting into the mails, so the master minds have not had time to figure out the circular pasture problem and get the answer to us before this issue goes to press. See next week.

Thomas Cannarella sends in this exercise to give your gray matter a healthy glow:

The aggregate age of a family of four—father, mother, son and daughter—is 97. A few years ago the father's age was eight times his son's age at the time. The son was then one-seventh his mother's age. The difference between the family's aggregate age then and now is equal to the father's age then. How old was the daughter then?



PUT ALL YOUR POWER IN THE JOB

All your power delivered to production machines now, means more air power, fire power, battle power for fighting men in the air, on the sea, and on the land, sooner and faster. It is the Victory formula for shortening the war.

You can get more battle power out of horsepower immediately with Dodge Rolling Bearings. Installed quickly and economically, they save power from wasting itself battling friction — give motors the opportunity to put all their power into the job of production. Lubricant is locked in by indestructible steel seals, that pass all power through but shut out destructive substances.

Dodge Rolling Bearings are rugged—carry heavy loads and resist shocks

—permit high speed operation—insure continuous performance. They reduce wear and maintenance, prolong life of machinery. Seals exclude dust, dirt and water, remove danger of damage to product through oil leakage. 50,000,000 revolutions can ordinarily be expected with one greasing. They provide dual load carrying capacity capable of accommodating both radial and thrust loads — simplify design of machinery — permit standardization and allow interchangeability.

Dodge Bearings are available in a wide selection of types and sizes, suitable for all service conditions.

Dodge Distributors specializing in "The Right Drive for Every Job" provide industry with a source of supply from local stocks, including alternate selections.

DODGE MANUFACTURING CORPORATION, Mishawaka, Indiana, U. S. A.



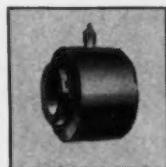
Dodge-Timken Special Duty Ball and Socket Pillow Block.



Dodge-Timken Special Duty "S1" Pillow Block.



Dodge-Timken Special Duty "D" Unit Mount.



Dodge-Timken Special Duty "B1" Unit Mount.

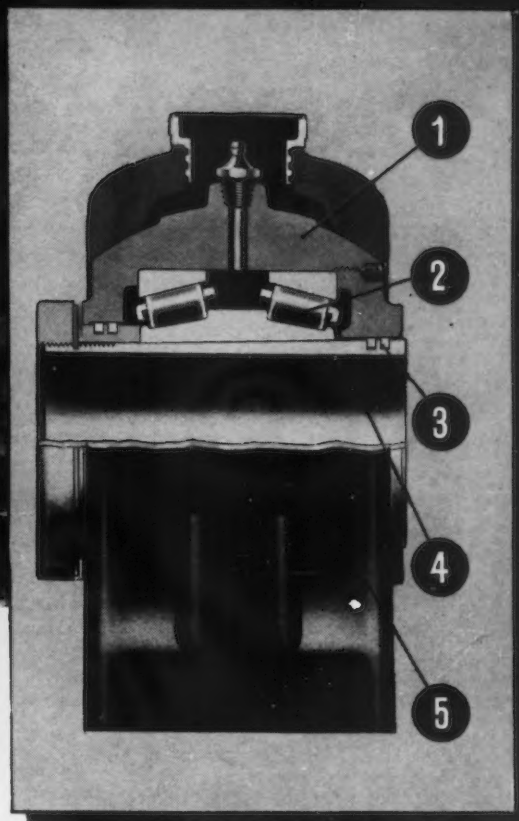


Dodge-Timken Special Duty "S1" Unit Mount.

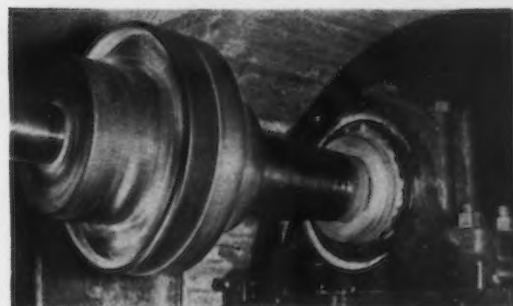
DODGE

MISHAWAKA

THE RIGHT DRIVE FOR EVERY JOB



1. Full ball and socket self alignment saves wear and power waste — simplifies installations.
2. Timken tapered roller bearings give full radial and thrust load capacity, vital to putting all the power in the job.
3. All-metal automotive type piston ring seals keep grease in and dirt out—close the bearing tight to foreign substance but leave it wide open to passage of power.
4. Long split adaptor sleeve distributes load over entire length of bearing — reduces pressure per square inch on shaft and eliminates peening action which causes rapid wear.
5. Rugged, well proportioned outer housing gives over-all protection to bearing.



Faced with the problem of immediately stepping up production, putting more power in the job, a North Carolina textile mill reports that Dodge-Timken Special Duty Bearings (shown above) helped solve the problem of power transmission modernization quickly and economically.



Dodge-Timken Special Duty Pillow Blocks are reducing both power and maintenance costs in this West Coast lumber mill installation. The ability of Dodge bearings to absorb shock loads and smoothly cushion power is saving materials and power every day.

POWER *Dives* BEGIN WITH POWER *Drives*

Dear Editor:

HARD CHROMIUM PLATING

Sir:

We are interested in Industrial Chromium Plating with a view to salvaging undersize gun parts and want to get all the information we can get on it.

W. B. McLEAN,
Plant Engineer

Sorel Industries, Ltd.,
Quebec

• See the Feb. 1 and 8, 1934 issues of THE IRON AGE for two-part series by D. A. Nemser, entitled "Industrial Chromium Plating." Also see the May 18, 1939, issue for the article, "Chromium Plates Engine Parts for Wear Resistance." You might also ask United Chromium, Inc., 51 E. 42nd St., New York, for its 16-page booklet, "The Last Thousandth of an Inch."—Ed.

WELDING GOGGLES

Sir:

We are interested in obtaining information on where to buy the new goggles for eliminating glare in welding aluminum. These were perfected by the Lockheed Aircraft Corp. in conjunction with the Corning Glass Co.

LEONARD M. SIEGLE
Keystone Electric Mfg. Co.,
Philadelphia

• Write to B. F. McDonald Co., 1248 S. Hope St., Los Angeles, Calif.—Ed.

SUPER-PRIORITY ORDER

Sir:

On page 113 of the Sept. 24 issue you mention the new super-duper priority order PD-637 which takes precedence over all other orders. How do we go about getting one?

C. W.

• PD-637 is an emergency order, granted only in rare cases, after all other means of obtaining the material have been exhausted. Usual procedure is for the Army, Navy, or other government agency to see the WPB Regional Director, who has authority to issue a PD-637. This is a production and delivery directive that takes precedence over every other order, allocation, priority rating, etc., on the producer's books.—Ed.

ABRASIVE CUT-UP MACHINES

Sir:

In your September 17 issue, page 69, mention is made that some of these abrasive cut-up machines have more than one wheel and can cut pieces to various lengths.

Would you kindly give us the name of the firm who makes this type of machine?

W. WALLACE McKAIG
Cumberland Steel Co.,
Cumberland, Md.

• Occasionally the user himself puts on a longer spindle and on it mounts two or more wheels with spacers between them. One manufacturer of such machines is A. C. Campbell Division of American Chain and Cable Co., Bridgeport, Conn.—Ed.

HARDENABILITY

Sir:

I enjoyed very much Dr. A. E. Focke's article on "Hardenability" in THE IRON AGE of August 20, 27 and September 3.

I should like to have a reprint copy.

JAMES T. PARKER,
Chief Metallurgist

Pierce Governor Co.,
Anderson, Indiana

OIL-HEATED BLAST FURNACES

Sir:

We have been informed that there are several large blast furnaces in the East that have been using considerable amounts of oil. These were supposed to have been converted from coal to oil several years ago. How many of these are in the East and approximately what amounts of oil do they consume a day.

ARTHUR E. GEBHARDT
A. L. Gebhardt Co.,
Milwaukee, Wis.

• No blast furnaces in this country use oil as fuel.—Ed.

PRIORITY GUIDE

Sir:

The last IRON AGE Priorities Guide we have is dated June 4, 1942. Will you please let us know whether or not a later issue has been printed?

CHAS. L. HEATER,
Vice-President
American Steel Foundries,
Chicago, Ill.

• See page 103.—Ed.

TOOL-TIPPING CEMENT

Sir:

In your April 16 issue you mention "Cinch," a material used in cementing high speed tool tips to mild steel shanks. Wm. Beardmore & Co., Glasgow, would like to obtain a small sample in order to determine whether the material would assist them considerably in reducing tool costs.

A. SCOTT
British Ministry of Supply Mission,
1800 K St. N.W., Washington

• W. R. Chapin Co., 5703 Central Ave., Indianapolis, makes Cinch steel cement. Claude S. Gordon Co., 1988 E. 66th St., Cleveland, distributes it. Better write to C. O. Anderson, general manager, of the latter company.—Ed.

WATER VAPOR-OXYGEN CHECK

Sir:

Your September 3 issue of THE IRON AGE, page 55, describes a method for continuous check of water vapor

and oxygen in a hydrogen atmosphere furnace.

The writer would like to know if the apparatus could be applied to dissociated natural gas, such as is generally used in atmosphere copper brazing and bright annealing.

R. DEUCHER

Feick Mfg. Co.,
Cleveland, Ohio

• We believe a variation of this meter can be applied, but we recommend that you address Westinghouse at East Pittsburgh, Pa., attention of Hendley N. Blackmon, Public Relations Div.—Ed.

MAGNESIUM CASTINGS

Sir:

I am trying to get some information regarding magnesium casting. I'd be greatly indebted if you could inform me as to where I could get any books or data regarding same also casting process.

J. JONES
British Purchasing Commission,
Toronto, Canada

• Magnesium foundries have been rather secretive about their processes. THE IRON AGE has, however, published some excellent articles on the subject. These have been incorporated in a 220-page book, "Better Foundry Methods," which will be available about Oct. 15.—Ed.

CENTRIFUGAL STEEL CASTING

Sir:

Will you please advise us if you have any technical data bearing on the centrifugal casting of steel.

We would also like to know of any books or other publications on this subject.

M. M. HATTEN,
Purchasing Agent
Electro Dynamic Works,
Bayonne, N. J.

• Centrifugal steel casting is another process concerning which not a great deal has appeared in print. THE IRON AGE's most recent articles are included in the 220-page "Better Foundry Methods," which will be ready in about a week.—Ed.

CENSORED COPIES

Sir:

I regret to report that some copies have been received recently with pages "removed to comply with censorship regulations."

Would you be so good as to keep complete copies of these censored issues until after the war, so that we might preserve a complete volume? If you are notified by the censor about such deletions, I should be most grateful if you would keep complete copies.

H. M. CASHMORE,
City Librarian
Birmingham Public Libraries,
Birmingham, England

• We are always aware of which issues are censored. Although our own files of back copies are rarely complete, back number dealers (H. W. Wilson & Co., 960 University Ave., New York, is our favorite) can supply missing issues.—Ed.

Will they lose battles FOR LACK OF STEEL?



We *could* lose crucial second-front battles . . . see needless thousands of our soldiers sacrificed . . . even lose the war. But we *must not*.

We'll shorten the war by giving our fighting men all the steel equipment they need. It's not solely up to the workers in war plants. It's up to all of us, because scrap iron is desperately needed to make steel that goes into this fighting equipment.

Here Are the Figures: Our steel industry produced 67 million tons in 1940—broke all records by producing 83 million tons in 1941. *Yet we need still more.* This year the steel industry *can* produce 90 million tons if you and other Americans will gather up and turn in six million *additional* tons of scrap.

Why Scrap Is Needed: New steel is made from scrap

iron and pig iron (about half and half). Because the scrap has already been refined it cuts down priceless production time.

What Can You Do? Be sure your plant has salvage committees with an energetic chairman for every department. Let them gather all the scrap iron they can find and call the scrap dealer. He'll hurry it off to the steel mills to help win these life-or-death battles. All scrap collected will be purchased by the steel industry at government-controlled prices.

Back up our fighting men. The least we can do for them (perhaps sons or brothers) is give them the fighting equipment they must have to win. Your scrap will help. Get it in—fast! The American Rolling Mill Company, 3031 Curtis Street, Middletown, Ohio.



TURN IN ALL YOUR SCRAP

This Industrial Week . . .

- **Varied Views on Output Puzzle Industry**
- **WPB Abolishes 210 Priority Forms**
- **Steel Officials Meet on New Quota Plan**
- **Blast Furnace Projects Face More Delay**
- **Labor Shortage Hampers Scrap Drive**
- **Ingot Output Gains Half Point to 99½ Per Cent**

DIFFERENCES between high Government officials, such as President Roosevelt and WPB chief Donald M. Nelson have, as to the rate of war production, gives the metalworking industry another item to fit into its worry schedule.

Some arms producers still have no open space for worrying about the fact that the war program's leaders, who have full details on the production picture, cannot agree on whether the war plants are doing (1) a bad job or (2) a good job. New problems are coming up too fast.

In some areas, particularly in New York State, some war plants find themselves the targets of a renewed drive for compliance with the WPB's priority regulations. Violations, according to one WPB district manager, are threatening the present output of arms. Warnings have been issued that "ignorance of regulations will no longer be accepted as a valid excuse for the misuse of strategic materials." One priority order said to be commonly violated is M-126, the regulation prohibiting use of iron and steel in many products.

TO most war companies, except possibly a few of the larger units who have staffs concentrating on the tortuous ramifications of the priority system, the task of keeping fully informed seems close to impossible. For another week priority news ran along the two familiar channels, one concerning speculation about how the priority system would be changed, the other on actual revisions which have become part of priority law.

However, the predicament of metal firms battling to survive under Government controls—the latest development on this line being the national freezing of wages and salaries—has its occasional moments of relief. One came this week in the mass killing of priority forms. More than 210 such forms, formerly used by WPB, have been abolished and an additional 130 have been simplified by the WPB Committee for the Review of Data Requests from Industry. In addition to eliminating or simplifying more than 150

Turn to the new 56-page Iron Age War Priorities Guide in this issue, pages 103 to 158, for latest information on which PD forms to use. Watch THE IRON AGE each week for revisions in priority forms and orders.

forms, this committee, headed by Joseph I. Lubin, has standardized the format of other forms so that all of them will fit a standard typewriter. (Mr. Lubin should get an "E" for excellence award from industry for this.)

Killing of some of the hundreds of forms is a long

step forward, although it does force industry into a temporary scramble to determine which forms to use (a few WPB forms may continue to be secret expediter forms and are unlikely to appear in any published list. Plants receiving such mystery forms are invited to send questions to Mr. Lubin's committee).

AMONG priority developments still to stay in the speculative stage is the Steel Quota System and the burial date for PRP. Last week, sales vice-presidents of most steel companies met at Washington with WPB officials to argue out more of the details of this new plan of distributing steel to the right plants at the right time. Guesses that the new plan is likely to go into effect around Jan. 1 continue to come from persons who should know. Not much can be said about this plan except that it is progressing. Meanwhile, the groups working on the Steel Quota Plan, which might provide a pattern for distribution of other materials, are benefiting from the report of the American Steel Commission which recently studied the British Priority System and favors the adoption of something of the sort here.

Individuals on this commission lost from five to twelve pounds in weight each during their recent visit in England.

TO some metal industry observers it seemed this week that Ferdinand B. Eberstadt, new WPB vice-chairman, is slated to have more and more power over war material production and distribution, including steel, for which he is understood to favor the new Quota System. (Listeners at the Youngstown Sheet and Tube-Bethlehem Steel merger trial of the early nineteen thirties will recall Mr. Eberstadt as the erect man in the hard hat and hard collar who helped Cyrus S. Eaton fight the merger.)

While many iron and steel expansion programs have long been on paper, some are in reality no nearer completion than months ago. Several blast furnace projects are running from two to four months behind estimates. Two in the Pittsburgh district which were slated for production by January or February, 1943, will not be producing pig iron until next spring. Two large electric steel expansion programs in the Chicago area are being delayed through lack of material and at least one of these will be several months behind schedule. One large coke oven project in Western Pennsylvania is months behind schedule. The holdup in blast furnace installations is serious in view of the scrap shortage, and the retarding of electric furnace projects is likewise serious because of heavy demands for electric alloy steel.

Most of the requirements for steel for the above projects have been on rolling mill schedules but have been "bumped off" by other Army or Navy requirements. While no particular agency or individual can be blamed, the "on paper" steel expansions again demonstrate the difficulty of deciding which of several important needs must be met first at a time of great national peril. Whether urgent Navy requirements should displace steel tonnages needed to complete urgently needed blast furnaces is the toughest of problems.

Some of the material bottlenecks are being widened. While the shortage of scrap is now replacing the shortage of steel plates as a topic for publicized concern by war program leaders, the plate situation is slowly improving. Efforts of the steel industry to produce plates may go down in history as one factor in the winning of the second World War.

TYPICAL of the drive to lift plate production are the achievements of the largest steel producer. At the end of 1939, this company had a plate capacity of some 1,700,000 net tons. Spurred by what then was a defense program, capacity was increased to 2,200,000 net tons by the end of 1940. At the close of 1941, the same producer's capacity was lifted to 3,500,000 tons, or a gain of 1,300,000 tons in a year. Driven by still greater ship plate demand, the company's plate capacity has advanced during 1942 to around 5,200,000 tons a year.

Thus, since the defense program, merging into the "war program" began, plate production in this instance has been increased 300 per cent, or enough to provide for an additional 750 cargo ships each year. The increase is largely by conversion of other facilities to plate-making. Other units of the steel industry have made a comparably good showing.

To many observers, by-products of this war of production have been the battle of press releases, with the pace set at Washington, and for the evaluating of war plants by the number of press clippings they can produce. Plate producers as a group seem to be losing the battle on the publicity front but they have given the nation's shipyards the plates.

Priestly Appointed to WPB

• • • William J. Priestly, vice-president of the Electro-Metallurgical Co., has been appointed chief of the WPB Iron and Steel Branch, Alloy Steels Unit by Hiland G. Batcheller, new chief of the branch. Mr. Priestly replaces A. Oram Fulton, who will work on steel distribution problems.

Priestly's background: Before his association with Electro-Metallurgical, he worked for Bethlehem Steel Co. Later he supervised building and operation of the U. S. Naval Ordnance plant at Charleston, W. Va. In 1922, he joined Electro-Metallurgical as a metallurgist, later becoming research vice-president for use of ferro-alloys.

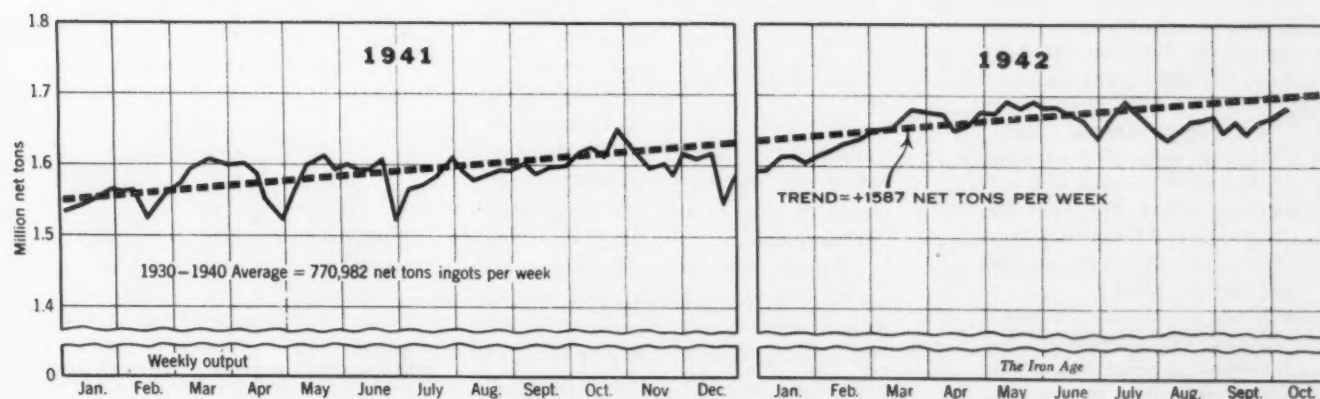
The national scrap recovery drives, one for home scrap, the other for industrial scrap continued to gain headway. The newspaper drive for old metal is achieving results beyond expectations in many areas. Much of the scrap is light and of poor quality but its collectors hope that the mills may be able to use it during the winter when mixed with heavier

Read the editorial, "Keep the Openhearth's Burning," page 29.

metal from other sources. Difficulty in obtaining adequate labor for scrap yards may necessitate some kind of assistance by Government agencies. In view of the labor shortage, volunteers may be called to sort household scrap in some cities.

STEEL output this week climbed a half point to 99.5 per cent from 99 per cent last week. Responsible for this increase are the gains of a half point to 100.5 per cent at Pittsburgh, and two points to 96 per cent at Cleveland. Detroit ingot output has slipped a half point to 107.5 per cent while steelmaking in the Eastern district has dropped 11 points to 95 per cent. Southern Ohio River operations are 11 points lower at 106 per cent.

The Iron Age



Steel Ingot Production by Districts Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	Cleveland	Buffalo	Wheeling	South	Detroit	S. Ohio River	West	St. Louis	East	Aggregate
October 1.....	100.0*	102.5	96.0	93.0	94.0	104.5	87.0	98.0	108.0*	105.0	102.0	107.0	106.0	99.0
October 8.....	100.5	102.5	96.0	93.0	96.0	104.5	87.0	98.0	107.5	95.5	102.0	107.0	95.0	99.5

* Revised



"OEM PHOTO BY HOLLEM"

NOW YOU MUST LEARN *"HOW-TO-DO-IT"* BETTER..CHEAPER..WITHOUT WASTE

CAN YOU USE HELP?

We have available a new motion picture and a booklet (soon off the press), both on *"Stainless Steel Welding."* Also for your production men, a complete *"Handbook of Special Steels."* For your engineers, certified *"Blue Sheets"* on each tool and stainless grade. For your apprentice or training courses, *"Elementary Discussions on Tool and Stainless Steels."*

● Write for the informational help you need. In addition, the personal assistance of our Technical Staff is at your call.

PRODUCING constantly improved war goods at a diminishing rate of cost, and an increasing rate of speed, ordinarily wouldn't be much of a trick for America. It's right up our industrial alley.

But conditions today are not as usual. There is no inexhaustible ocean of materials. There is, instead, a controlled stream flowing through rigidly restricted channels. We have to do *more*, actually, with *less*.

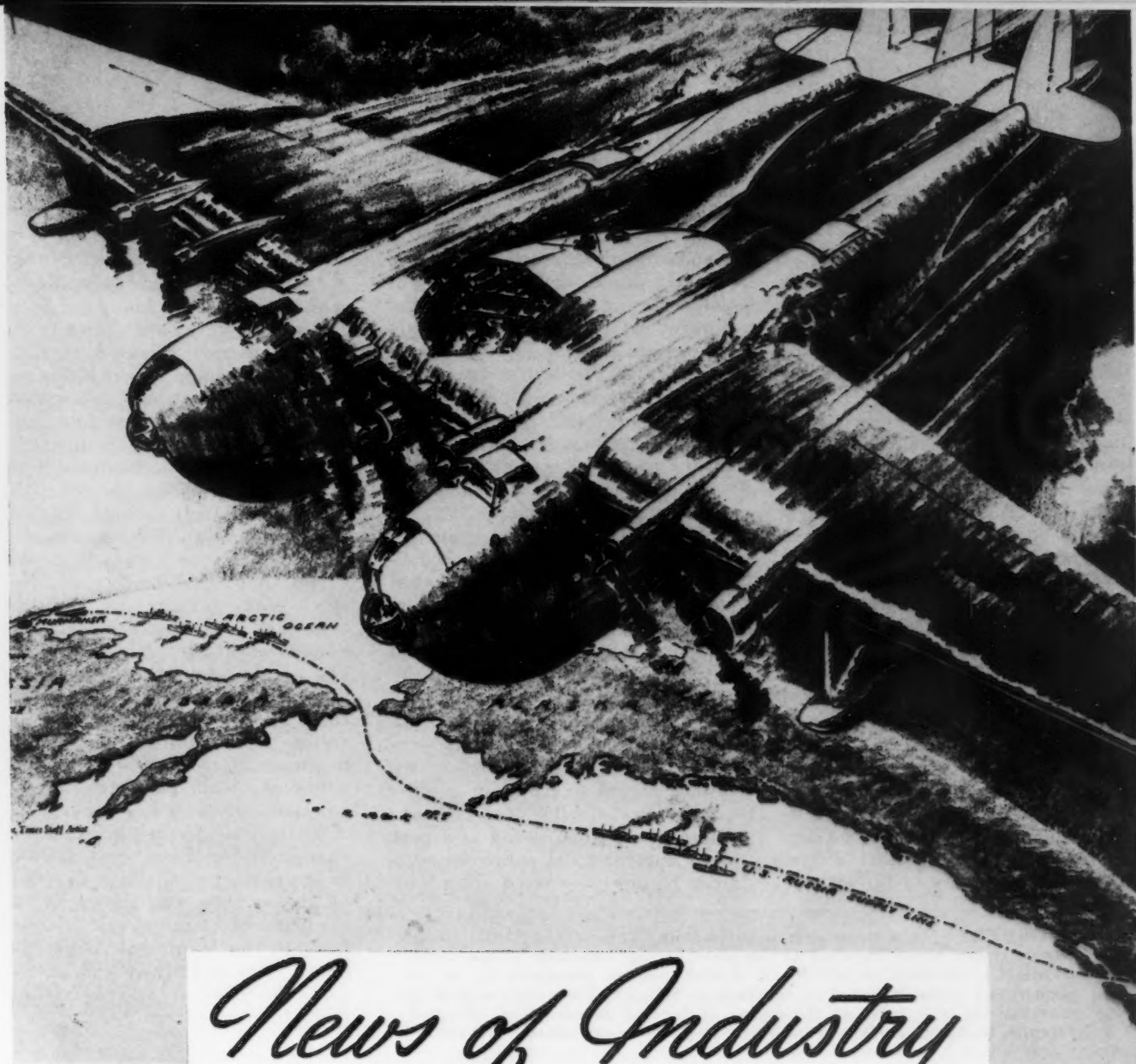
Thrift is especially essential with the vital steel alloys. If you use alloy steels in *any* form, check your dies, your cutting tools and machine set-ups, your heat-treat and welding methods—check and recheck every operation to reduce

rejects, spoilage, undue scrap, or any other form of waste. Above all, carefully segregate and classify your unavoidable alloy steel scrap (*that is the only way the mills can reclaim it*) and rush it back into the useful cycle.



Allegheny Ludlum
STEEL CORPORATION
GENERAL OFFICES: PITTSBURGH, PENNSYLVANIA

A-8665 ... W & D



News of Industry

Major War Problem Now Is Supply, SAE Told in Los Angeles

By R. RAYMOND KAY
Southern California Editor
The Iron Age

Los Angeles

• • • Cloaked in war time restrictions, the SAE National Aircraft Production meeting was held in Los Angeles, Oct. 1, 2, and 3. A. E. Raymond, Douglas Aircraft vice-president in charge of engineering, and general chairman of the meeting, told the Society that the duty of battle planes is to "soften up" the enemy defenses so that occupying troops will not suffer crippling losses. "I don't think any one thing will win the war," he said, "but aircraft will certainly play a major part." It was the largest SAE Pacific Coast meeting ever held.

Rising to the defense of this

country's air effort, Col. J. H. Jouett, president of the Aeronautical Chamber of Commerce, said, "America has mastered the air everywhere that American pilots are flying American equipment. The box score is the answer to our critics. On seven fronts we are meeting and defeating our enemies wherever weather permits. Axis

planes are falling under our guns at a ratio of 4 to 1. The nation's air production program is coming along so well that we are approaching the President's goal of 60,000 planes."

The major war problem is now supply rather than production, according to Thomas Wolfe, Western Airlines, Inc., who spoke for the Air Transport Association of America. "We must deliver the goods and quickly. The average daily cargo carried by domestic airlines during the year prior to Pearl Harbor was 60,000 lb. But so tremendous has been the growth of this field under war conditions that the cargo capacity of domestic carriers will be approximately 3,000,000 lb. per day by Jan. 1." In spite of this 5000 per cent increase, Mr. Wolfe said that we are still fighting a 400 m.p.h. war with a 10 m.p.h. supply line.

"What we need," he said, "is a rapid production of available types

KAISER SUPER-CARGO

PLANE: An artist's conception of Henry J. Kaiser's contemplated super-cargo plane drawn from Kaiser's own description and described by him as being remarkably accurate. The flying freight car will be a twin-hulled seaplane powered by seven 2000 hp. engines and capable of carrying 60 tons of freight for 2000 miles or 20 tons for 6000 miles. Flying freight car is not a bad simile as a good average loading for a gondola car is 60 tons.

of transport planes now. The spotlight on huge transport ships is too far ahead."

How American "greaseballs" of the American Volunteer Group skillfully "cannibalized" grounded planes to keep others in the air was described by Tye M. Lett, Jr., who was with the AVG for a year as General Motors-Allison Division overseas representative. Lett compared the combat qualities of the Curtiss P-40 and the Jap Zero. The Zeros had greater maneuverability and rate of climb than the early P-40's, but the latter had protection which the former lacked, and were superior in "the most important pursuit combat category—speeds upwards of 400 m.p.h."

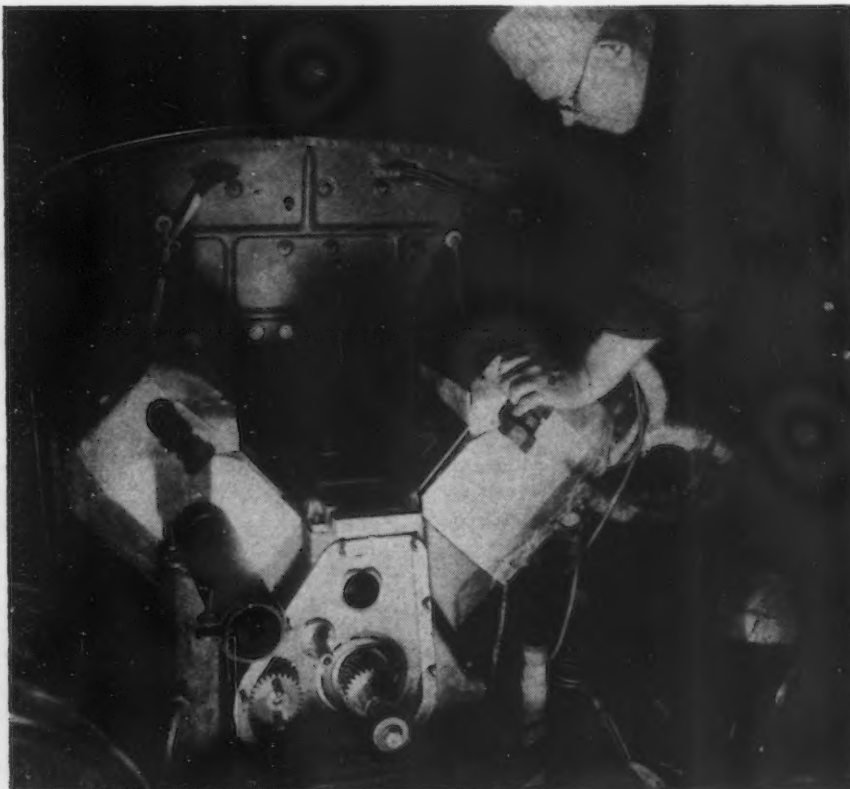
Col. A. W. Herrington of Marmion-Herrington Co., and SAE president, who recently returned from an investigation of aircraft performance in India, Burma, and China, gave the principal address. "Those of us who have had the opportunity to examine the engineering practices of other countries, particularly Germany and Japan, are now fully aware of the terrible

price they are paying for their failure to take more cooperative steps in standardization work. Standardization in our automotive industry has contributed an essential factor in making possible the tremendous expansion of aircraft production. We have provided our airmen with the best and soundest air fighting machines in the world. It is our sworn intention to further increase the lead we have and to always provide our boys with the best designs and most durable aircraft the world can supply."

What will post war conditions do to our tremendous aircraft producing industry? Mr. Herrington pointed out that "we are a large nation, geographically, and we will develop a civil air transport system the size of which will surpass the dreams of the wildest visionaries of today. And because we are the only nation capable of bearing the economic load of such a burden, we will be forced to maintain a military air fleet capable of going anywhere at any time to aid as a part of an international police force in order to preserve world order."

HAY-BURNER?—No, a steam driven automobile. This compact little steam engine shown being installed at the plant of the American Steam Automobile Co. operates on 600 lb. of steam pressure generated by an oil burner and boiler mounted on the rear of the car. The cars are said to travel about nine miles to the gallon of fuel oil so consumed. Biggest catch is, that only holders of high priority ratings can obtain the cars.

Wide-World Photo



War Restrictions Curtail Some Fields at Chicago

Chicago

• • • The retarding effects of the war economy on many lines of Chicago business are shown in the August figures released recently by the Chicago Association of Commerce. The analysis discloses 18 indices on the minus side, compared to only nine on the upgrade.

In those lines of business most directly affected by the war, the upturn is sharply defined. Factory payrolls were up 18.2 per cent over a year previous; electric power production, up 6.8 per cent; live stock slaughterings, up 11.3 per cent; and long distance telephone calls originating out of Chicago to key points about the country, up 6.5 per cent. Contrasting with these improvements were the slumps in non-military fields. Department store sales were off 11.2 per cent; bank clearings, off 1.9 per cent. There was a general let-down in postal receipts, stock exchange transactions, and activity in the real estate field. A decrease of almost 5000 was shown in the number of passengers cleared through the Municipal Airport; a sharp drop in railway and air express shipments; and a curtailment in carloadings here.

Construction Up 39 Per Cent As Federal Volume Gains

New York

• • • September engineering construction volume totaled \$712,709,000, which topped the corresponding period last year by 39 per cent, but declined 12 per cent from last month.

Federal construction accounted for 91 per cent of the September volume and rose 78 per cent above a year ago. Despite a drop of 64 per cent in state and municipal work, public construction was 53 per cent higher than in the 1941 month as a result of the federal gain. Private work, however, fell off 48 per cent from last year.

Public work was 14 per cent below the August total as federal and state and municipal construction were 14 and 11 per cent lower, respectively, than in the preceding month. On the other hand, private engineering volume climbed 16 per cent over a month ago.

Union Assails Use of Steel for Old Model Parts

Pontiac, Mich.

••• A controversy over manufacture of replacement parts has arisen at the Pontiac Division plant of General Motors.

A letter was sent from the local UAW-CIO president, James Lucas, to Washington officials, charging that fenders were being produced for 1937 and 1938 model automobiles, although other departments were short of steel to the extent that lay-offs had been caused in recent weeks.

The company retorted by stating that the steel involved 66 tons of strip which had been semi-fabricated and were usable only for the fenders for which they were earmarked, except as scrap. Completion of the run of fenders, it was stated, made possible the scrapping of 345 tons of fender dies.

ASA Approves Three Boiler Parts Standards

••• Three American Standards governing specifications for steel for stationary boilers, boiler rivets and pressure containing parts have been approved by the American Standards Association. The first standardizes specifications covering carbon steel plates up to 4 in., inclusive, in thickness, for stationary boilers and other pressure vessels; the second covers rivet steel and rivets for use in such boilers, and the third covers carbon steel castings for valves, flanges, fittings and other pressure containing parts for high-temperature service.

Meehanite Grants Rights

Pittsburgh

••• The Meehanite Metal Corp., here, has granted manufacturing rights for Meehanite Castings to three industrial concerns in South Africa, namely: Acme Ironfounders Limited, Johannesburg, Union of South Africa; The Pretoria Brass & Iron Foundry, Pretoria, South Africa; Messrs. Morris and Martin Ltd., Port Elizabeth, South Africa. These companies will use Meehanite Castings in the production of a variety of ship building work, agricultural equipment, and miscellaneous general engineering castings.

Ford-UAW Contract Provisions Released

Detroit

••• Text of the revised agreement between the Ford Motor Co. and the UAW-CIO has been released. The main features include retention of the dues check-off, changes in seniority and shop committee provisions and the establishment of a discipline code. The union shop is continued.

Several changes are provided in the grievance procedure. A company labor relations man in each unit or plant will be given complete authority to settle grievances. All grievances must be settled within two weeks of the time they are presented to the management representatives, or else they are referred within 10 days to an appeal board.

Seniority within plants will be determined by the locals of those plants but employees transferred to other factories are given protection for their work tenure.

No determinations are provided on wages. This issue is now pending before the War Labor Board.

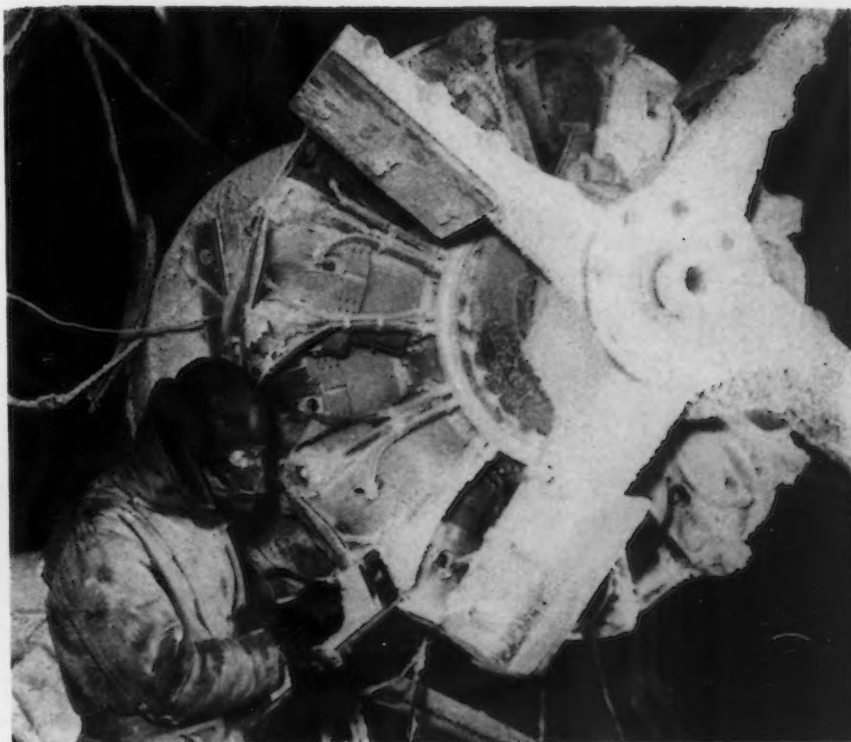
Nelson Suggests Board to Help Small Companies

••• A War Liabilities Adjustment Board, to give financial and technical assistance and priorities on machinery and equipment to small business at the end of the war, and help in discharging overhanging liabilities during the war was suggested last week by Donald M. Nelson.

Mr. Nelson told a Senate special committee that such a board would further the use of all productive facilities during the war. Nothing must be allowed to lie idle now, he said. "Machinery that cannot be put to work for essential purposes can be made a source for spare parts for machinery in use, or for scrap. We must not pack away, in grease or in any other way, machinery and equipment against the end of the war." Pointing out that it may not always be feasible to ask owners to care for machinery until it is needed for parts or scrap, he suggested a WPB agency to buy and hold equipment in the same way inventories of raw materials are now bought.

Press Assoc. Inc. Photo

JACK FROST STUDIES: This Wright Cyclone engine, ice covered after being subjected to simulated winter conditions is being checked by a Wright Aeronautical Corp. engineer. Purpose of these frigid tests is to determine the action of these engines under the bitter cold conditions encountered in Iceland and other icy regions where American flyers may be asked to operate.





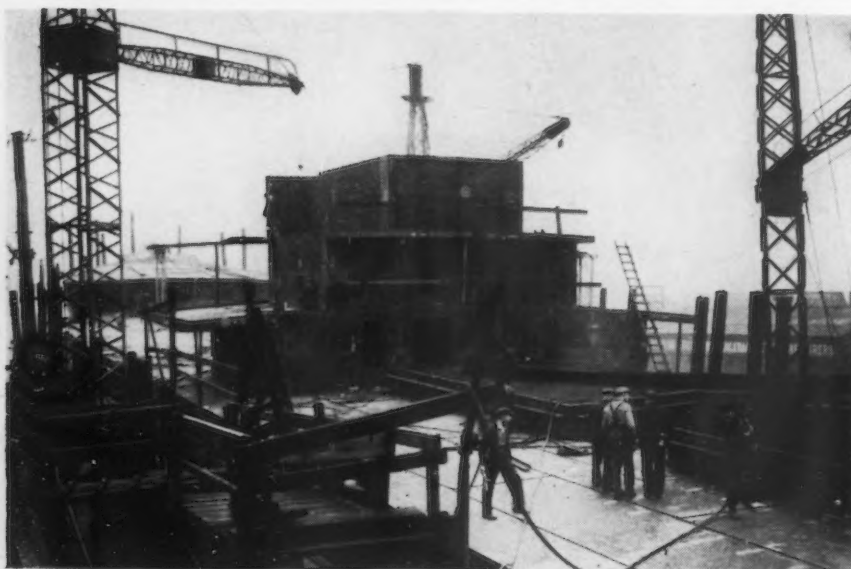
British-Combine Photo

ROLLING PILL BOXES: First views of the new English "Churchill" tanks. These tanks are said to be so heavily armored that they can be used as pill boxes yet can attain a high speed. Formidable 6-pounder guns provide dangerous fire-power. The lone figure admiring the mighty tanks is Churchill.



British-Combine Photo

PRE-FAB SHIPS IN BRITAIN: British shipyards, like some U. S. yards, are launching pre-fabricated ships, made of standard design at inland plants. The photo shows a steel deckhouse built in an inland factory. Adoption of the pre-fabricated idea has greatly speeded British launchings.



Press Assoc. Inc. Photo

OCEAN BOUND: At least 2000 miles from the sea this heavily armored naval craft is being launched into the Kaw river at Kansas City. The craft is ready for testing and will then proceed down stream under its own power. This is only one example of how inland ship yards are augmenting our shipbuilding capacity.

Acid O. H. Group Formed At Pittsburgh Last Week

Pittsburgh

• • • The Acid Open Hearth Research Association was formed here recently with the purpose of conducting practical and technical research upon the problems governing the production of steel in the acid open hearth steel furnaces.

Dr. G. R. Fitterer, Department of Metallurgy, University of Pittsburgh, has been appointed director of research, and J. W. Linhart, research metallurgist. The work will be conducted by Dr. Fitterer under the auspices of the University of Pittsburgh in conjunction with full study of actual furnace heats in the plants of the member companies.

The member companies at the time of formation are:

Atlantic Steel Castings Co., Chester, Pa.; Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa.; Blaw Knox Co., Pittsburgh; Carnegie-Illinois Steel Corp., Pittsburgh; Continental Roll & Steel Foundry Co., East Chicago, Ind.; Detroit Steel Castings Co., Detroit; The Falk Corp., Milwaukee; Heppenstall Co., Pittsburgh; Lukens Steel Co., Coatesville, Pa.; Mackintosh-Hemphill Co., Pittsburgh; McConway & Torley Co., Pittsburgh; Mesta Machine Co., Pittsburgh; The Midvale Co., Nicetown, Pa.; National Roll & Foundry Co., Ardmore, Pa.; Ohio Steel Foundry, Lima, Ohio; Railway Steel Spring, Division American Loco. Co., Latrobe, Pa.; John A. Roebling's Sons Co., Trenton, N. J.; Standard Steel Works, Division Baldwin Loco. Wks., Burnham, Pa.; United Engineering & Foundry Co., Pittsburgh.

The officers of the new association are:

Chairman, H. G. Grim; vice-chairman, Dr. F. H. Allison; secretary, F. C. T. Daniels; treasurer, R. C. Heaslett. Executive Committee: George S. Baldwin, H. E. Dowie, Walter H. White, J. S. Zahn, J. L. Nichols, E. H. Harder, E. H. Hobs, W. E. Harvey, Herman P. Bassbach.

AISC Announces Design Competition

• • • The American Institute of Steel Construction announces another annual bridge design competition, open to bona fide registered students of structural engineering and architecture in recognized technical schools of the United States and possessions, and offers three cash prizes of \$200, \$100 and \$50 respectively, for the designs placed first, second and third. A jury of nationally-known engineers and architects will judge the competition on Feb. 17, 1943. Drawings must be received at the Executive Offices of the American Institute of Steel Construction, 101 Park Ave., New York City, not later than Feb. 8, 1943.

Help Them Win...Turn in Your SCRAP!



Scrap is steel or iron useless in its existing form but valuable as *raw material* for remelting. Since it is already refined, more scrap in the furnace charge speeds up the refining process and enables steel to be turned out faster for implements of war... More scrap—*from your plant*—means more steel.

Conservation Authorities Recommend the Following 8 Steps

1. Put some one individual in charge of scrap in all departments of your business and GIVE HIM AUTHORITY TO ACT.
2. Comb the plant and yards for dormant scrap, abandoned equipment, old boilers, pipe, moulds, obsolete dies and parts, material now being destroyed which has salvage value.
3. Survey all plant equipment, particularly idle standby or discarded machines, with a view to applying or converting them to useful production.
4. **SEGREGATION:** Identify, classify and segregate scrap and supervise its handling to avoid contamination. This will increase its value. Provide separate containers, clearly marked for each class of scrap material.

Repair or rework worn or broken cutting tools. Keep unusable small pieces and turnings segregated. Even high speed steel grinding dust is valuable.

Dismantle discarded equipment promptly into its components—electrical, fastenings, lumber, etc.—so that these parts may be utilized or scrapped.

Sort blanks, short ends, cut-downs, clippings, etc., for possible reuse for smaller parts made in the same or other departments.

Recover and reclaim used cutting oils, lubricants, surplus paints and spray finishes.

Sort sweepings and miscellaneous waste to recover scrap values.

5. Constant reminders in the form of posters, illustrations of right and wrong methods, pay envelope enclosures, house organ publicity, etc., are potent aids to the conservation program.

6. Release for scrap, obsolete engravings, electrotypes, and standing types for catalogs, forms and advertising material.

7. Inspect all refuse to detect avoidable waste and excessive rejections. Educate production executives to correct such conditions at the source.

8. For information and assistance on special phases of conservation and salvage communicate with Industrial Salvage Section, Conservation Division, War Production Board, 9th Floor, Washington Gas Light Building, Washington, D. C., or with nearest regional office.

The metallurgical experience of our technical staff is available to aid you in these and other technical phases of metal salvage.

KEEP SCRAP MOVING INTO WAR PRODUCTION!

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET
NEW YORK, N. Y.

In the Midst of the ATTACK!

KEYSTONE Wire

In the headlines you read the success of a daring Commando raid. Note how the reporting emphasizes one overpowering factor—*complete equipment*... quickly charging planes, escort vessels, barges, tanks and guns.

No mention, of course, is made of the thousands of "fighting" items made of WIRE. And yet their presence is indispensable—in forms such as the few illustrated here.

Yes, tremendous tonnages of the right types of wire are daily bolstering the all out AT-TACK. That's why Keystone's entire facilities—from the open hearth furnaces to shipping platforms—are "drafted for the duration", twenty-four hours a day.

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PEORIA • ILLINOIS

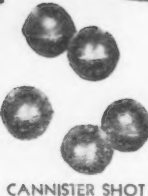
Special Analysis Wire
for All Industrial
Uses



BULLET CORES



GAS MASK
CLIPS



CANNISTER SHOT

BEAD WIRE FOR
ARMY TRUCK,
GUN CARRIAGE
AND
CAISSON
TIRES



NEWS OF

A.M.A. Told of Wage And Manpower Control

... Canadian manpower controls and experience with wage stabilization, much of which is setting the pattern for controls in this country, were described last week to members of the American Management Association in New York by Bryce M. Stewart, Canada's deputy minister of labor. Among the wage stabilization lessons Canada's administrators have learned are the following, he said:

Wage control policy cannot be very flexible; the highest rates must be rigid and must not creep higher. People cannot be frozen on substandard wages. Zone differentials are dangerous; they lead inevitably to migration and dissatisfaction. It is as important to set minimums as it is to set tops. For moving costs, other expenses arising out of job shifts, and differential allowances where necessary, special allowances should be given instead of an attempt made to take care of these things through wage adjustments. Businesses unable to meet wage and other costs, at ceiling prices,

For description of Canada's labor priorities system, see *THE IRON AGE*, Oct. 1, p. 210.

must be subsidized; subsidization by the government requires concomitant government influence in management of the subsidized company.

Mr. Stewart said subsidization is not yet a big factor, but that it will be. Oddly, he said, 80 per cent of applications for wage increase grants come from employers. If the increases would come from excess profits, on which there is a 100 per cent tax, they are invariably refused, he said. One week's vacation with pay has become standard and it is dependent on regular attendance at work.

Canadian women are registered and are doing a large part of war work, he said. For example, in Ontario, most highly industrialized province, 60 per cent of industrial trainees are women.

Speakers at the A.M.A. manpower conference told members that:

In April we had 10,000,000 in war industries; by next April it will be 19,500,000, and by April of 1944, 23,000,000.

Since 1939, wages and sal-

Lapham Forecasts Group Organization

• • • Industry after the war must think and organize as groups, not as individual companies, Roger Lapham, employer member of the National War Labor Board, told members of the American Management Association last week in New York. "Steel managements must think in terms of the steel industry, not in terms of U. S. Steel Corp., Bethlehem Steel Co., and so on," he said. Only by a "new mental attitude and a new philosophy" on the part of management can the "awful let-down" and tremendous problems of mobilization be met, he said.

aries have gone up about 68.5 per cent, but during that time employment has increased 25 per cent, hours worked 13 per cent, and overtime has increased to a great extent.

Wage inequities and dislocations must be ironed out whether they are in the wage structure of the plant itself, in the area or in the industry. If a wage is substandard, it will be raised regardless of ability to pay, or anything else.

Strikes in the shipbuilding industry have numbered 45 in 1941 and 17 in 1942 (through August) compared with 106 in 1917 and 140 in 1918.

Absenteeism in shipbuilding is costing us two cargo vessels a week.

Since Pearl Harbor the government has hired 1,350,000 federal workers. The government service as a whole has an annual labor turnover rate of 42½ per cent. The departmental services have a turnover of 82½ per cent.

Army Ordnance Publishes Book on Production Ideas

• • • The Army Ordnance Department, under direction of Major General T. J. Hayes who heads a special "idea" section of the department, has compiled a 24-page booklet called "Tremendous Trifles." The book tells of many redesign ideas for speed and conservation in war production, but does not describe the new methods themselves. Copies may be obtained from Army Ordnance, on request.

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• The chances of accidents, injuries and deaths are always multiplied when untrained workers have to drive unfamiliar tasks at high speed.

If you have such operating conditions, all your chains should be put in first class shape, ready for the abnormal loads which might be laid upon them.

May we offer a few practical suggestions to be passed on to your men:

Inspect Chains for

1. Battered or bent links
2. Cracks and distortion of welded rings and hook eyes.
3. Stretch.
4. Wear.
5. Gouge marks.
6. Open welds.
7. Links with peened, hammered or polished surfaces which indicate the chain should be annealed or normalized.

• We have been fortunate in the ideas brought to us by our customers regarding their experience with chain. This data, added to our own laboratory and field experience in the selection, application, use, inspection, and maintenance of chain, is at your disposal on request. Outline your problems, we'll do our best to help.

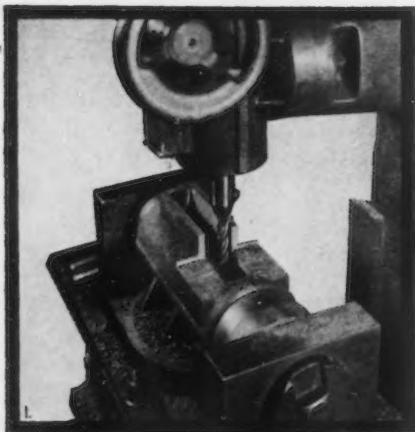


AMERICAN CHAIN DIVISION

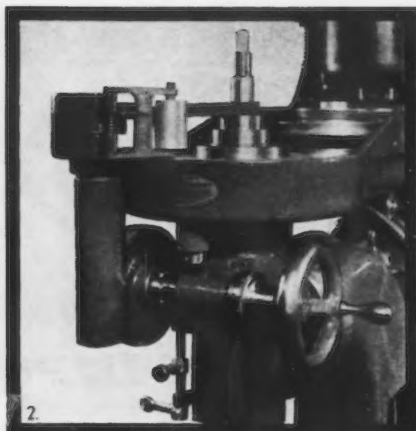
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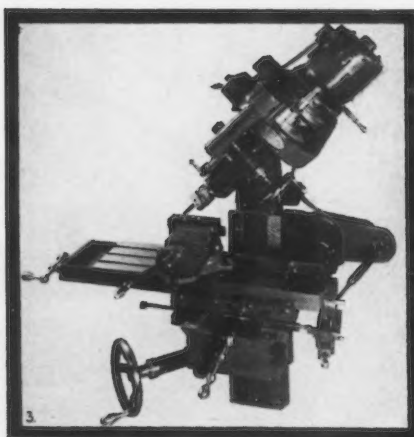
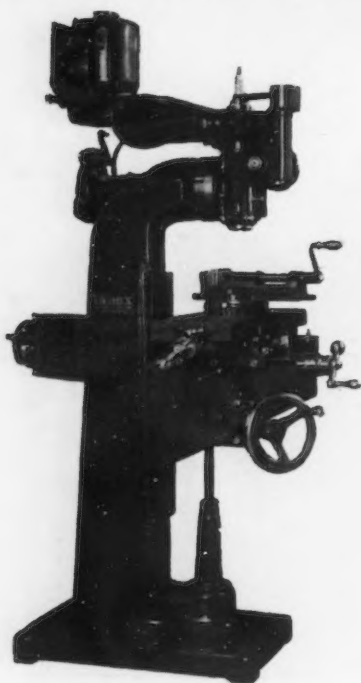
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This has now long been an accomplishment, TRIED & PROVEN by hundreds of Defense Plants on parts for all kinds of war equipment from binoculars to battleships.

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40-H INDEX

*A Tried and Proven Machine for Milling, Drilling and Boring
in the Tool, Die, Experimental and Production Shops*

Steel Projects Held Back By War Material Needs

Pittsburgh

• • • Evidence is piling up that blast furnace projects, open hearth and electric steel expansion plans and coke oven installations are running from two to six months behind schedule.

One blast furnace that was to be blown in here early in January will probably not make iron before April while a second one that was slated to go into production by February will not be helping out the metallic shortage until June, if then.

Two large electric steel installations at Chicago are being held up and one will be several months behind schedule. On the other hand a coke oven project near here will start output at least eight months after the original scheduled date.

In tracking down the reasons for this condition which is serious in view of the need for more pig iron and more electric steels, the main obstacle seems to be, according to a survey made by IRON AGE that steel material such as structurals and plates are not reaching builders in time to complete the jobs on schedule. In many cases the bulk of the work has been done but the lack of small quantities of plates and shapes is holding up projects, the cost of which runs into millions and the need for which is paramount.

Steel companies cannot help out on the matter because they are obligated to set their steel rolling schedules in accordance with WPB instructions and priorities. In many instances steel material slated for iron or steel expansion programs has been taken off the mill schedule because special rush orders for the Navy or Army have been entered with a higher rating.

In some of these retarded expansion jobs the lack of plates has been a bottleneck but the Maritime Commission has insisted that merchant ships come first because of their strategic importance. On the other hand while this is admitted it is said also that if the shortage of scrap is as serious as indicated by responsible authorities then no time should be lost in bringing in blast furnaces.

Likewise the hue and cry from some quarters is the need for more

electric steel capacity for the war effort at the same time two important jobs are being held back because of lack of certain kinds of material, notably steel which is going into Navy or Army or Maritime work.

Steel, Government and private industrialists agree that there is too much being demanded at "the same time" but this it is said does not alleviate the need for more pig iron for more steel if valuable days are not to be lost because production cannot be started.

Navy officials argue that ships etc., are the prime necessity, the Maritime says that goods cannot be delivered if merchant ships are not made and other agencies have the same outlook as to their needs while on the other hand steel observers watching scrap piles dwindle to nothing, watching the approach of cold weather with its difficulties in collecting scrap ask the pointed question "of what use are many things now being made or in the process of being made if within the next few months steel output will be forced down seriously due to lack of either scrap or pig iron. "It is pointed out that more than a million tons of steel will have been lost this year because there has not been enough metallics to fully engage the steel facilities of the Nation and if this condition grows worse, the same or more drastic losses will result in the first six months of 1943.

Impartial observers are pleading for some kind of complete coordination and realization of what really should be "first," but point out that conferences with results must be the answer instead of the present confusion.



"They met on the assembly line. It was love at first bomb sight."

Hammond

OF KALAMAZOO

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These Hammond high-production 6 and 8 spindle table automatics are in use now — "helping to win the battle of production." If you have a problem in Burring, Brushing, Polishing or Buffing plated or base metals in plane parts, tank parts, bomb parts, and shells, send us samples — some in the rough, one acceptable finished piece — for complete engineering report. Don't delay, do it today!

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A shot or grit that will blast fast with a clean finish.

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Drive to Locate Stainless Steel Begun By Three Agencies

Washington

• • • The Steel Recovery Corp., WPB's Material Redistribution Branch and the WPB Distressed Stock Unit, which are engaged in redistributing approximately 5,000,000 tons of frozen, idle or excess stocks of steel in the hands of manufacturers as pointed out in THE IRON AGE of Oct. 1, are sending forms to holders of such inventories in an attempt to locate and dispose of this material.

The first product which is to be handled by the tripartite agency is stainless steel. The second is structural shapes which is to be followed with recovery programs on alloy steel bars, carbon bars, wire, etc. The 10 classes of products which will be sold to private users, requisitioned or bought by the government will be either reprocessed, used in "as rolled" form, or remelted if the products bought by the government are not suitable for war use.

The Steel Recovery Corp. will execute sales contracts and absorb government losses expected in a national operation of this size. The WPB Material Redistribution Branch has the requisitioning authority. MRB will establish purchase programs for each type of steel and send forms to holders upon which inventories will be reported. Price formulas will be set up by MRB after conference with OPA.

In a drive to get in stainless steel, effort will be made to sell to private users after inventories are located. This policy will be followed with respect to all of the programs, with OPA prices governing sales.

When the government buys steel which cannot be otherwise disposed of, the price it will pay has been set up in an arbitrary pricing list, devised by MRB.

The purpose of the price list is to establish prices which will divide the loss on steel which can not be used directly in the war effort and which the WPB Distressed Stock Unit will allocate as scrap.

The price list will be used in all of the programs and is divided into two columns. One column is headed "Limited cost of product" the other is headed "Government price." If

When You Work For AMERICAN You're Working For America

Each Employee of this Company makes an average of 9720 screws per day—which are used to assemble Airplanes, Guns, Tanks and Ships. Our Army and Navy are ON THE JOB EVERY DAY and they need these Planes and Guns and Tanks and Ships to WIN THE WAR.

Today There Are **98** Employees Absent
From the American Screw Company

America Loses **952,560** Screws Today

12 of these ABSENT EMPLOYEES
are from This Department

Work for America—Don't Loaf for the Axis

ABSENTEEISM DISCOURAGER:

Pointing out to its workers the effect on vital war production of a single day's absence by one employee, the American Screw Co., Providence, R. I., has posted these large placards in its plants. Printed in red, white and blue, the placard has three slots in which the total number of employees absent, the amount of production lost and the number absent from each department is inserted each day. The first two numbers are keyed, with total production figures being available for any number of absentees.

a steel owner wants to know what his product will bring on sale to the government, he first determines what the limited cost figure is and then discovers what the matching government price is.

Limited cost figures are expressed in a price range in cents per pound to the nearest hundredth of a cent—for example "1.95 to 2.04." The scale of limited cost figures runs from the foregoing figures to 80c. a pound for which the government offers a maximum price of 56c. a pound. The government does not contemplate the purchase of products whose limited cost is 80c. a pound or more.

The government price is an arbitrary figure based on a scale which makes the loss to the stock owner as little as 15 per cent in the carbon steels, and which rises to as high as 85 per cent in the high cost wholly fabricated stainless steel products.

Forms WPB-1100 A, B, and C are being sent to manufacturers in the program on stainless. WPB 1100A is the inventory report for stainless in primary form. WPB

INFORMATION TO SPEED PRODUCTION

COMPLETE
POWER
TRANSMISSION
DATA



3 Helpful Catalogs

- No. 56-V: V-Belts and V-Sheaves.
- No. 56-G: Gears and Sprockets.
- No. 66: All Other Power Transmission Equipment.

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1100B is the inventory report for stainless which is not assembled or is in partly or wholly fabricated form. WPB 1100C contains the price instructions for arriving at prices which will be paid by the government.

In general, a manufacturer will compute his limited cost by taking the base price as established by OPA price schedule and adding to it standard quantity and finish extras. A warehouseman will deter-

mine his cost by taking the base price, adding to it his quantity and finish extras, and subtracting special discounts.

According to the instructions in Form WPB 1100C, to arrive at the price to the government for products listed lot by lot and by alloy groups, the holder must first compute costs and arrive at "limited cost" figures. The base price used in calculating the "limited cost" figures is to be taken from the in-

dustry prices in effect on April 16, 1941, according to the OPA Price Schedule No. 6 with the provision that these base prices shall in no case be higher than those quoted by United States Steel Corp. subsidiaries. The basing points for the base prices, customary and mandatory discounts and extras are those permitted in OPA Price Schedule No. 6. Special discounts are those other than customary and mandatory discounts. Only size, shape, heat treatment and finish extras are permitted to be added to the base price to arrive at "limited cost."

Size of shape extras do not include cutting to length or width, or cutting extras of any kind, or close tolerance extras. If the lot consists of products in primary form the limited cost is based on the present form of the products. If the lot consists of products in non-assembled, partly or wholly fabricated form, the limited cost is based on a single primary form from which the products were directly fabricated. By "non-assembled, partly or wholly fabricated form" is meant any non-assembled forms except castings subjected to any fabrication process beyond such fabrication as mills customarily provide upon specification of standard extras.

To determine the limited cost for idle inventories of non-assembled, partly or wholly fabricated products reported by alloy groups:

Calculate the limited cost for the alloy group in cents per pound, to the nearest cent. By limited cost is meant any products reported in alloy groups in the base price per pound, exclusive of any freight charges, and less all customary mandatory discounts for forging billets of the designated alloy type. If base prices are not quoted for forging billets of the designated alloy type, the "limited cost" of products in alloy groups means the base price per pound exclusive of any freight charges, and less all customary, mandatory and special discounts for hot rolled bar.

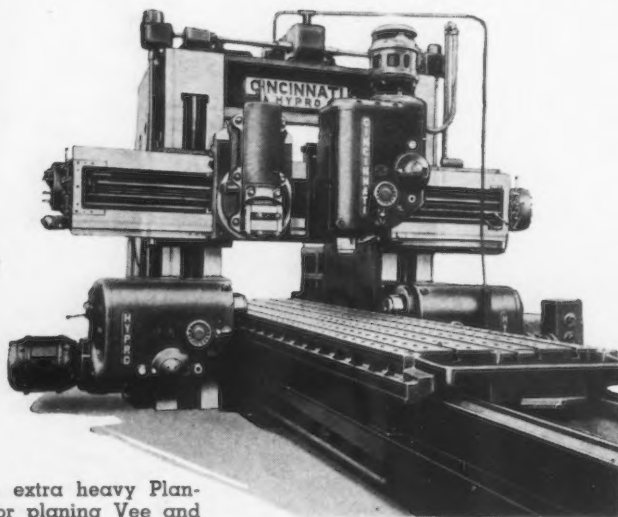
The base price in determining limited cost is to be found in OPA Price Schedule No. 6, subject to the same limitations described in the foregoing paragraphs. By alloy group is meant stainless steel products which have the same AISI designation for the alloy, or the same nominal chemical type or same exact chemical formula.

Cincinnati

HYPRO

**COMBINATION PLANING
AND MILLING MACHINES**

**Planing and
Milling with
Same Machine
on a High
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Basis**



Multiple Tools in extra heavy Planing Head used for planing Vee and Flat and rugged Milling Heads with individual 20 H.P. motors, have reduced production time over 50% on grinder beds. This is only an example of time that can be saved with a machine of this type. Machine illustrated is of entirely new design, incorporating individually driven 9½" Quill Milling Heads providing spindle speeds of 10 to 200 R.P.M. capable of handling cutters over 18" in diameter.

A wide range of planing speeds is provided to the table through separate planer motor and control. Machine can be instantly changed from milling to planing by movement of selector switch or control handle. If you are interested in placing precision milling and planing on the same machine, the new Hypro Combination Machine merits your close attention.

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THE CINCINNATI PLANER CO.

CINCINNATI, OHIO

Labor Highlights

- J&L Asks \$1 a Day Penalty Clause
- Moreel Says We Don't Need Unions
- Kaiser Hirelings Mass Migrate
- CIO Protests Premium Pay Exemption

• • • This week's labor picture is one of minor revolts, at least one dire sounding threat to union security and an historic mass migration of labor. The major of the minor revolts was one of management revolting against the unions which flared up in the Jones & Laughlin Steel Corp.'s answer to the recent WLB order demanding that some 46 steel companies show cause why their union contracts did not or should not conform with those of "big" and "little steel."

The Jones & Laughlin response to the WLB order, in addition to undisclosed statements, said in effect that it had suffered 57 wild-cat strikes at the hands of the United Steel Workers of America CIO during the 16 month 1941 contract period and had lost 59,863 irreplaceable man-hours of war production. This loss was incurred during a period supposedly wholly protected by their contract with the union and a solemn union pledge against striking made to the President. In fact, at least 20 of these strikes are claimed to have occurred since Dec. 7. The J&L suggestion was that a \$1 a day penalty be exacted from every worker participating in a strike, as a means of control. The company pointed out that a similar plan had been operated in their captive mines with good success.



"Oh, so you sent it ahead by parcel post!"

• As a revolt, it was minor and as the company officials emphasized, the suggestion was made not as a quarrelsome statement against the union but to offer the union a plan for achieving discipline in the union rank and file wherein the company apparently believes the trouble originates.

A dire sounding threat was made against the much talked of union security when Rear Admiral Ben Moreel, chief of the U. S. Bureau of Yards and Docks, ad-

ressed the Construction Trades Department of the American Federation of Labor on Sept. 30. Warning that labor organizations would lose public support if they condoned any work stoppages, Admiral Moreel said:

"Your answer may be, 'They can't live without us.' I will admit that no one can live without labor, but they certainly can live without labor unions. They are living without them in Germany, and in Italy, and in Japan, and they seem to be

In These Days of SCARCITY . . .

KNIVES MUST LAST LONGER

Rogers Grinders Conserve Knives

Sharpen your own knives and be independent of delays, higher costs and *unnecessary wear!* Finely adjusted automatic control assures *keen cutting edges . . . with minimum removal of metal.* No skilled operator required.

Reasonable shipments to high priority holders . . . subject to our obligations to war production industries. Also manufacturers of circular knife and band saw sharpening equipment.



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Grinding
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or Any Straight Knife
on Edge or Face

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"NT"
KNIFE
GRINDER**

SAMUEL C. ROGERS & COMPANY

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Buffalo, N. Y.

ROGERS KNIFE GRINDERS

PRECISION QUALITY SINCE 1887

doing right well—at least for the moment—and, in my opinion, they will damn well live without them here if all of us don't get in there and pitch."

Despite the vigor with which Admiral Moreel flung this taunt at labor, little actual significance is attached to his words by those who should be worried if anyone is.

The start of one of the largest migrations of workers since the

gold rush took place in New York last week as the U. S. Employment Service set about hiring and shipping the first contingent of 20,000 workers for Henry Kaiser's shipyards and new mill in California. The USES called quits Sept. 29, for a breathing spell, after interviewing 7000 men for Kaiser employment and sending 3479 of them to the Kaiser offices where at least 98 per cent of them were hired. It is estimated that prob-



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● With the installation of A.A.I. Automatic Alarms . . . used in connection with standard, high wire, industrial guard fences . . . sabotage, espionage and theft are immediately eliminated as a threat to production schedules. Operating on the principle of sound detection, Automatic Alarm Systems "hear" any attempt to cut through, climb over or under fences so equipped, and automatically give instant warning of danger and direct guards to the actual zone of disturbance. A.A.I. Automatic Alarms may be employed with only a "handful" of men for the successful safeguarding of vital properties and plants. The amazing sensitivity and efficiency of this sound method of protection, together with relatively low cost and ease of installation, warrant its use by every important industry.

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Explanatory Literature is Available upon Request

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YOUNGSTOWN, OHIO, U. S. A.

Steel Employment Declines in August

• • • Employment in the steel industry during August averaged 647,000, slightly below the July figure of 655,000 employees, according to the American Iron & Steel Institute. In August a year ago approximately 654,000 employees were at work. Despite the decline in total employment, steel ingot production in August of this year exceeded output in both July and in August, 1941.

Steel company payrolls in August likewise declined from the July totals, but were substantially above the August, 1941, level. In August of this year, payrolls totaled \$118,718,000, compared with \$120,671,000 in July and \$112,757,000 in August of last year. Wage-earning employees earned an average of 104.1 cents per hour in August, as against 102.7 cents per hour in July.

ably 4000 men were hired by the close of this first hiring session and a good percentage of these have already left for the West Coast to snap up good paying jobs. Mrs. Anna M. Rosenberg, who heads up the War Manpower Commission office in New York, under which the USES operates, states that the 20,000 man quota would be obtained without difficulty.

Another minor revolt occurring in the labor field this week happened within the unions themselves. This fracas resulted from the Presidential order of Sept. 9 which abolished premium pay for overtime (Saturday and Sunday) work falling within the 40 hour week. This order was shortly excepted by Secretary Perkins' exemption of the AFL Building Trade mechanics from the scope of the limitation.

The revolt came when Philip Murray, president of the CIO, is reported to have protested to Secretary Perkins charging favoritism to the AFL. It is also understood that the CIO United Radio, Electrical and Machine Workers of America are preparing to take steps to seek inclusion under the exemption.

The War Labor Board may also be brought into the discussion judging from the contents of a memorandum sent to affiliates by CIO general counsel Lee Pressman. His memo said in part: "Provisions of any outstanding collec-

tive bargaining agreements which are inconsistent with the Executive Order cannot be observed as long as the Executive Order applies. However, it is important to note that where this occurs the union has the right to negotiate the entire problem raised, and in the absence of an agreement between the union and the employer the dispute could be certified to the National War Labor Board for disposition."

U. S. Steel Adjusts Salaries To Meet Hourly Wage Change *Pittsburgh*

••• In a move to give white collared workers and other salaried employees a salary adjustment which would be consistent with the wage treatment accorded hourly workers at the direction of the War Labor Board, U. S. Steel Corp. and its subsidiaries made certain changes in the pay envelopes of salaried workers effective Sept. 1 and received in the monthly salary checks passed out last week.

The company's headquarters here refused all comment on the salary adjustment and withheld details, but did admit that some adjustments had been made.

From unofficial sources it is understood that all salaried employees making less than \$4,000 a year were granted retroactive pay bonuses for six and a half months amounting to a flat \$10 a month. This corresponds to the retroactive pay bonus granted recently to hourly workers at the direction of the WLB.

Aside from the retroactive feature, it is understood that salaried employees making \$2,400 a year or less were granted an increase of \$10 a month, effective Sept. 1. Salaried employees making more than \$2,400 were given a 5 per cent salary increase up to the brackets where such increase would bring the total payment to \$7,500 a year.

WLB OK's Chrysler Wage Increase *Washington*

••• The WLB announced Oct. 3 their approval of a 4c. wage increase for 90,000 Chrysler Corp. workers. The increase, which was allowed in the face of a request for a 12½c. raise, was held up until the President's new wage control directive was issued.

F. D. R. Freezes Wages, Salaries

••• Biggest news to hit the American Labor Front during this war transpired in Washington Oct. 3 when President Roosevelt signed the Cost of Living Stabilization bill, which gives sweeping wage control powers to him, along with control of all and sundry having to do with the cost of living. With

the ink hardly dry on his signature of the new bill, the President issued an executive order placing certain limitations on all salaries of \$5,000 and over and freezing wages of all hourly and salaried workers at the Sept. 15 level with recourse to the WLB and the new Office of Economic Stabilization (OES).

At the head of OES, President Roosevelt appointed Associate Supreme Court Justice James F.



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The method best suited for each particular stamping—to insure most effective results, most efficient production and most modest cost—is employed when you present your problems to the Parish plant.

Equipped to handle all types of work in all methods and sizes of stamping, our plant is able to meet your specifications in all its elements, including the factor of time.

Illustrated is a Spring Plank for railroad freight car trucks. Made of 7/16" metal—16⅞" wide at ends, 14¼" wide at center and 93¼" long with flanges 3⅞" high at center, 23/16" high at ends—it was pressed cold from heavy steel.

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We guarantee our customers these and other high standards of business relationships.

In our career of nearly 50 years as an iron and steel scrap broker we have built on these principles.

We solicit further opportunities to be of service in the movement of iron and steel scrap from industrial plants, railroads and scrap yards to steel mills and foundries.

The
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LABOR

Byrnes who will act as stabilization "czar," resigning his Supreme Court position.

President Roosevelt's choice of James F. Byrnes was lauded in Washington as a wise and effective one which would produce accurate and fast-moving results.

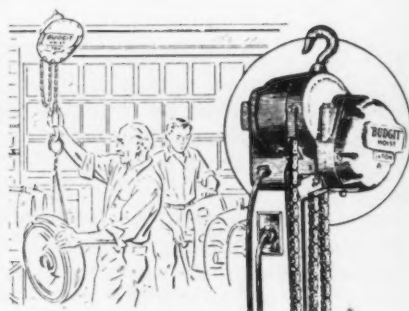
In effect President Roosevelt has fought for and won sweeping control powers which he has turned over to a trusted helper to carry out, thus achieving the concentrated control that he felt necessary yet keeping his own time free for a broader set of responsibilities connected with the pursuance of the war.

On the salary question, the President carried out the policy, which he has so long recommended, of limiting all salaries to \$25,000 a year after taxes and other authorized deductions are removed. He adopted the policy set forth in Senator Overton's addition to the main bill in which reductions were authorized under certain conditions on salaries of \$5,000 or over.

Rugged as this provision may sound, a number of legitimate allowable deductions from salaries, such as life insurance premiums, fixed obligations and others will lighten the hazard for earners of large salaries who must now struggle along on \$25,000 net. For the salaried man near the \$5,000 a year class practically no hazard is foreseen in the Overton provision.

Hourly wage earners, too, will find little cause for complaint as the freezing order has done little to change their picture except to remove the need for union-WLB bickering over wage increases which, in effect, are frozen now at the "little steel" basis—(15 per cent increase since Jan. 1, 1941). Although the WLB has deviated from this basis a few times recently, this is the yardstick and raises other than on this basis are strictly to end glaring inequities between workers in an area, between competing businesses or industries or for some equally good reason.

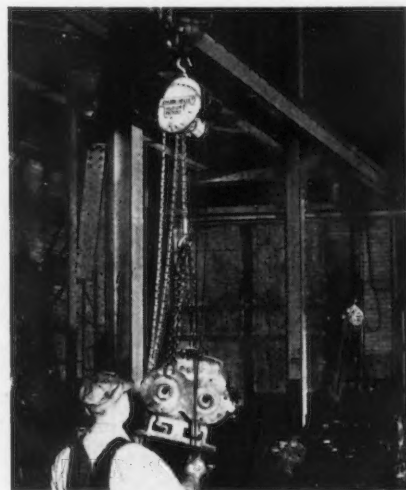
Actually the bill has frozen wages at the Sept. 15 level but leaves the door open to recourse through the OES and WLB in order to redress inequities, to provide suitable increase in individual salaries or wages when increased duties or responsibilities warrant



When strong men go . . .

THE young and strong go to battle. Their places in the production ranks are taken by boys, older men or women. Then an electric 'Budgit' hoist becomes of inestimable value. With it anybody can lift a part weighing up to a ton with almost no effort. Perhaps this is a way for you to maintain production and offset loss of men.

'Budgit' Hoists are portable, electric hoists with lifting capacities of 250, 500, 1000 and 2000 lbs. They are priced from \$119 up. Hang up, plug in, and use. For complete information, write for Bulletin 348.



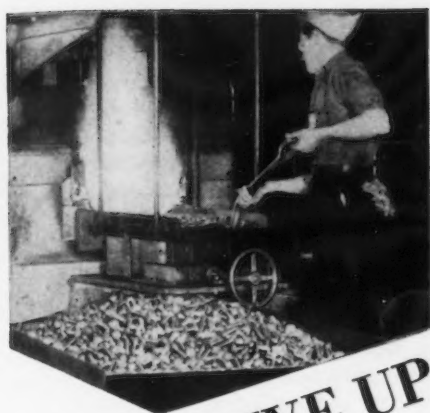
Send for catalog containing complete information on Hoists, also "Time Saving Calculator" that shows savings they earn.



'BUDGIT'
Hoists

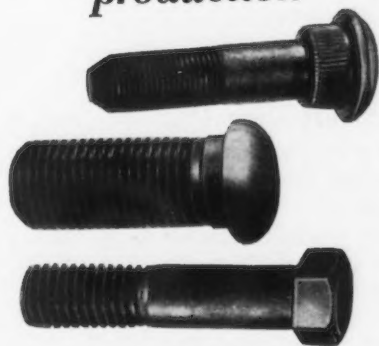
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Builders of 'Shaw-Box' Cranes, 'Budgit' and 'Load Lifter' Hoists and other lifting specialties. Makers of Ashcroft Gauges, Hancock Valves, Consolidated Safety and Relief Valves and 'American' industrial instruments.



**DON'T GIVE UP
WHEN**

**a shortage of Alloy
Steel Fasteners slows
production**



**Use OLIVER
Heat-treated Bolts**

• Many manufacturers are successfully using Oliver heat-treated bolts and nuts in place of hard-to-get alloy steel fasteners. Through modern heat-treating practice, Oliver bolts and nuts can be given such properties as high strength, toughness, durability, hard surface, high fatigue value.

• Oliver's heat treating facilities are modern, complete, and manned by experienced men. Use this method of solving your fastener problems.

OLIVER
IRON AND STEEL
Corporation

PITTSBURGH, PENNSYLVANIA
BOLTS . . . NUTS . . . RIVETS
STEEL FASTENERS

and to permit alterations of all kinds in individual cases.

It is not at all unexpected that the "little steel" (15 per cent) increase will be permitted to stand generally as the Sept. 15 basis whether it was actually in effect Sept. 15 or not, thus permitting some 46 steel concerns who are now "showing cause" for not meeting this wage schedule to readjust their wages to equal the "big" and "little steel" level. This readjusted wage rate, even though not obtained until after Sept. 15 will probably be recognized by OES and WLB as the official freezing-wage-level in these and perhaps many other cases.

It likewise offers every industry in the country to try to have this 15 per cent increase provided for their industry before being restricted by the freezing order. Consequently a great deal of strife and struggle may confront the OES and WLB in order to quiet the labor front once more—or a sweeping all inclusive order may clean the whole slate at one time. This is by far the desirable action and one which is not too unlikely.

Another effect seen in the text of the new bill is that unions and management, for the first time in U. S. history, will no longer be able to freely negotiate their wage contracts without recourse to the government. Henceforward every contract must be negotiated in the presence of the proper government authority to be certain that the wage agrees with the letter of the new wage limitations. Thus both the unions and management lose one of their most cherished rights.

Wage Adjustment Granted In Aluminum-CIO Negotiations Pittsburgh

• • • Negotiations between the Aluminum Co. of America and the CIO, which were started after the WLB had refused a general increase to the company's 30,000 employees because it held that the Aluminum workers scale had been brought up to a level by previous raises to the cost of living yardstick set up in the "Little Steel" case, were successfully concluded last week.

The WLB had left the door open for further negotiations to adjust wage inequalities and the results of these negotiations, as announced by the union, include:



**BEAT THE SHORTAGE!
WITH
OLIVER**

Heat-treated Bolts



**up to 3 months
SAVED on deliveries!**

WHEN high pressures, high temperatures, excessive vibration, shock and high speeds are encountered, use Oliver heat-treated bolts and nuts for strength, durability, toughness. Or if surface hardness is needed, Oliver carburized case hardening will provide bolts with glass-hard surface and a strong durable core.

Now that alloy steels are in such great demand, and consequently hard to get, you may be able to save many months by using Oliver heat-treated fasteners.



TO WAR CONTRACTORS

Oliver engineers will gladly help you speed production, by advising you regarding fasteners best suited for your particular requirements.

OLIVER
IRON AND STEEL
Corporation

PITTSBURGH, PENNSYLVANIA
BOLTS . . . NUTS . . . RIVETS
STEEL FASTENERS

1. A 5c. an hr. increase for men and women working at the New Kensington plant, effective as of Sept. 20.

2. An 8c. an hr. increase in the "hiring-in" rate and a 6c. an hr. increase in the base rate at the Detroit plant.

3. A 6c. an hr. general increase at the company's two plants in Bridgeport-Fairfield, Conn.

4. A general 5c. an hr. raise at the Edgewater, N. J., plant.

New Regional Directors Chosen

• • • Appointment of four regional directors who will supervise the manpower program in 19 states was announced this week by Paul V. McNutt, chairman of the War Manpower Commission.

James Bond, director of the United States Employment Service for Texas at Austin, was named director of Region X. The states

included in this region are Texas, New Mexico and Louisiana.

Joseph A. Smith, personnel director of Sears Roebuck and Company at Boston was named director of Region I, with headquarters at Boston. The states included in the Boston region are Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont.

Mrs. Anne Rosenberg, regional director of the Social Security Board at New York, was named director of Region II, the state of New York.

L. B. F. Raycroft was chosen director of the commission's third region, including Delaware, New Jersey and Pennsylvania. Headquarters for the region are located in Philadelphia. Mr. Raycroft has been active in labor supply work in the territory as a management consultant for the War Manpower Commission.

Strike Losses Up Still Less Than 1%

• • • Man-days lost from war production by strikes in August were 9/100 of 1 per cent of total man-days worked, according to statistics gathered by the War, Navy, and Labor Departments, the War Production Board, the Maritime Commission, and the WLB. The number of man-days lost rose from 233,614 in July to 266,353 in August, while the number of man-days worked fell from approximately 308 million in July to 300 million in August. The number of strikes in progress during the month rose from 222 to 229, but the number of men involved dropped from 80,722 to 79,414.

G-M Bows; Denounces WLB

Detroit

• • • General Motors Corp., through its president C. E. Wilson, bowed to the WLB directive which allowed a 4c. wage increase and a number of privileges for 254,000 G-M employees but made it clear in a letter made public last week that the terms of the directive were only accepted because of the country's engagement in an all-out war. The corp.'s reaction was in many ways similar to that of "Big Steel" whose president of Carnegie-Illinois Steel Co. wrote a similarly scathing letter, bowing but protesting their WLB directive.

ECONOMIZE ON ZINC

with

MEAKER PROCESS

for Electro-Galvanizing Wire



Even the lightest coatings are uniformly distributed on the wire surface. Control of coating thickness is exact. You can save on zinc, produce more perfect coatings, make more profit with Meaker Process for Electro-Galvanizing Wire.

"A proven success by every test"

WE INVITE YOUR INQUIRY

The **MEAKER** Company

1635 South 55th Avenue, Chicago

AFL Claims 99 of 100 "No-Strike" Settlements

•••The AFL, on its nationwide "Labor for Victory" radio program, announced that the no-strike score since Pearl Harbor is 2000 strikes prevented for each one that occurred.

How this achievement, vitally important to the successful expansion of war production, was accomplished was described by three outstanding "strike surgeons" who were interviewed on the program. They were Frank Fenton, national director of organization for the AFL; Dr. John R. Steelman, director of the U. S. Conciliation Service and William H. Davis, chairman of the NWLB.

Mr. Fenton disclosed that his office settles by peaceful means 99 out of 100 disputes involving directly affiliated local unions. He praised the widespread compliance by affiliates with labor's no-strike policy and announced that the federation does not and will not authorize, condone or excuse a strike under any circumstances.

Dr. Steelman revealed that the U. S. Conciliation Service, designated by President Roosevelt as the "front line" agency of the government in the mediation of labor disputes, has settled 95 per cent of the 7000 cases that have been handled by it since the war without any "before or after" strikes.

300 Soldier-Mechanics Complete GM Course

•••Service and repair men for diesel-powered fighting equip-

ment are now being graduated at the rate of 40 per week from a school operated by the Detroit Diesel Engine Division of General Motors Corp. and the GM Institute of Technology at Flint. Already, more than 300 soldier-mechanics have completed their courses. Classes are operated eight hours daily for six days a week, and entrants must have had at least eight weeks of basic mechanical training at an Army training center prior to joining the Diesel course.

More than 90 per cent of the study time is spent in actual disassembly and reassembly or operation of complete engines and component parts.

C-1 Stack Blown In

Chicago

•••No. 3 blast furnace of the South Works of Carnegie-Illinois Steel Corp. was blown in Oct. 1, after having been down since Aug. 7 for relining.

Cramming More Production

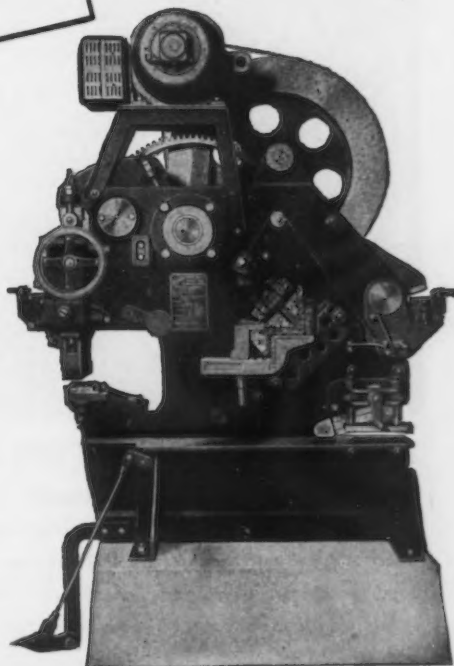
INTO EVERY HOUR

PUNCHING .. SHEARING
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of
ANGLES .. TEES .. CHANNELS
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FLATS .. PLATES

The operator at the controls of a Buffalo Universal Iron Worker is virtually a foreman with a whole crew of metal fabricators. Swiftly, accurately the most difficult work moves along on schedule—keeps production lines humming. These rugged, Buffalo-pioneered tools are today meeting Industry's severest assignments without let-up—and with 24-hour-a-day dependability.

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Buffalo

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Welds all sides *down-hand* with only one set-up



Place the weldment, regardless of size or shape, on a C-F Positioner. "Tack" it to the table, and the welder can finish the job *alone*—can weld all sides down-hand without further crane work or jacking-up. With a C-F Positioner the welder himself rotates, twists and turns the heaviest and most cumbersome weldments with a push button control—can lay every fillet down-hand, assuring stronger, smoother, flawless welds "all over" easily and quickly.

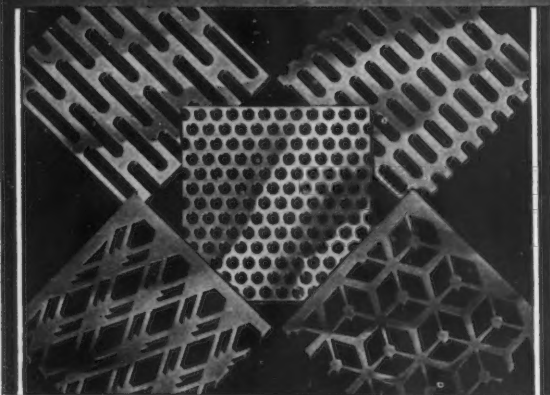
Only the universal, multi-purpose C-F Positioners, both portable and stationary, are pedestal-mounted. The entire positioner can be rotated on its base to give maximum floor clearance or convenience and is adjustable for height. Table rotates full 360° and tilts to 135° from horizontal. Hand or power operated from 1200 lb. capacity up.

Write for new Bulletin WP 22.



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ARE ESSENTIAL IN TIMES OF WAR AND PEACE

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AND
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114 LIBERTY ST., NEW YORK

AFA to Open New Meeting Series Oct. 9

Philadelphia

••• The local chapter of the American Foundrymen's Association has announced its 1942-43 season's program, opening with a lecture entitled "Core Baking—Theory and Practice" by Emile Pragoff, Jr., and dinner on Oct. 9. Mr. Pragoff, a member of this chapter, comes from the Hercules Powder Co. experimental station.

Mr. W. B. Coleman, secretary, announced the chapter's season program as follows:

DATE	SPEAKER—SUBJECT
Oct. 9, 1942	"CORE BAKING—THEORY AND PRACTICE" EMILE PRAGOFF, Hercules Powder Co., Wilmington, Del.
Nov. 13, 1942	GRAY IRON—"PRESENT DAY METHODS OF FOUNDRY OPERATION" S. H. BULLARD, assistant general fdry. supt., Bullard Machine Co., Bridgeport, Conn.
Dec. 11, 1942	"COOPERATION OF THE ENGINEER, PATTERNAKER AND FOUNDRYMAN" E. J. BRADY, SR., consulting engineer, Alloy Rods Co., York, Pa.
Dec. 21, 1942	CHRISTMAS PARTY
Jan. 8, 1943	NON-FERROUS—"STRATEGIC ALLOYS AND SUBSTITUTES" Speaker to be announced.
Feb. 12, 1943	STEEL—"WELDING OF CASTINGS" PAUL FIELD, materials engineer, Bethlehem Steel Co., Quincy, Mass.
Mar. 12, 1943	"CONTROL OF QUALITY OF CAST IRON" JOHN L. LOWE, metallurgist, Battelle Memorial Institute, Columbus, Ohio.
Apr. 9, 1943	"SAFETY AND GOOD HOUSEKEEPING IN THE FOUNDRY" JOHN A. SWEENEY, general foundry supt., Florence Pipe Fdry. & Mch. Co., Florence, N.J.
June, 1943	ANNUAL OUTING

West-East Oil Line Hits Daily Construction High

••• Construction of the 24-inch war-oil pipeline from East Texas oil fields to Norris City, Ill., hit a record pace of 8.15 miles completed in one day (Sept. 23), it was reported to Petroleum Coordinator for War Harold L. Ickes from the Little Rock, Ark., headquarters of War Emergency Pipelines, Inc.

For the past two weeks, an average of approximately six miles of pipe has been laid daily, a record that has not been beaten even for the laying of 10-in. or 12-in. pipe.



Harris & Ewing Photo

WPB TECHNICAL APPOINTEE: Webster N. Jones, director of the College of Engineering, Carnegie Institute of Technology, Pittsburgh, was appointed by Donald M. Nelson on Sept. 28 to head a nine-man committee of engineers and technicians to study means for establishing an office of technical development within WPB.

Frey Re-elected Head of A. F. of L. Metal Tradesmen

Toronto

• • • The metal trades department of the A.F.ofL., which closed its 34th annual convention here last week, re-elected John P. Frey of Washington, president. Other officers elected were: Joseph McDonagh, Washington, secretary-treasurer, and the following vice-presidents, Roy Horn of Chicago; Robert Byron, George Masterson and Harvey W. Brown of Washington; Joseph Franklin of Kansas City and Ray Kelsay of Cincinnati.

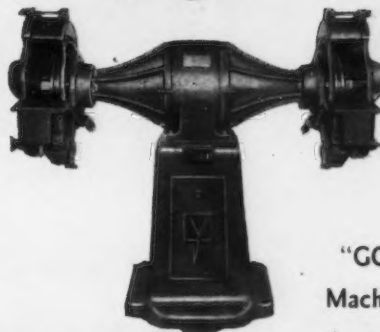
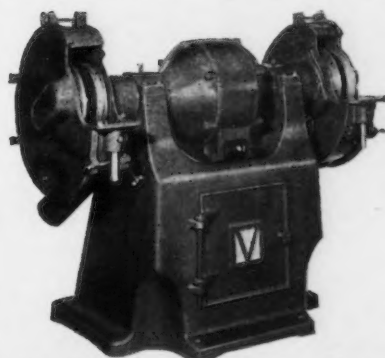
The convention was urged to adopt a resolution calling for deferment consideration for experienced foundry helpers in areas where war industries are concentrated. A telegram from the San Francisco Council pointed out that production in West Coast foundries was being seriously impeded owing to induction into the armed forces of large numbers of seasoned foundry helpers who are impossible to replace.

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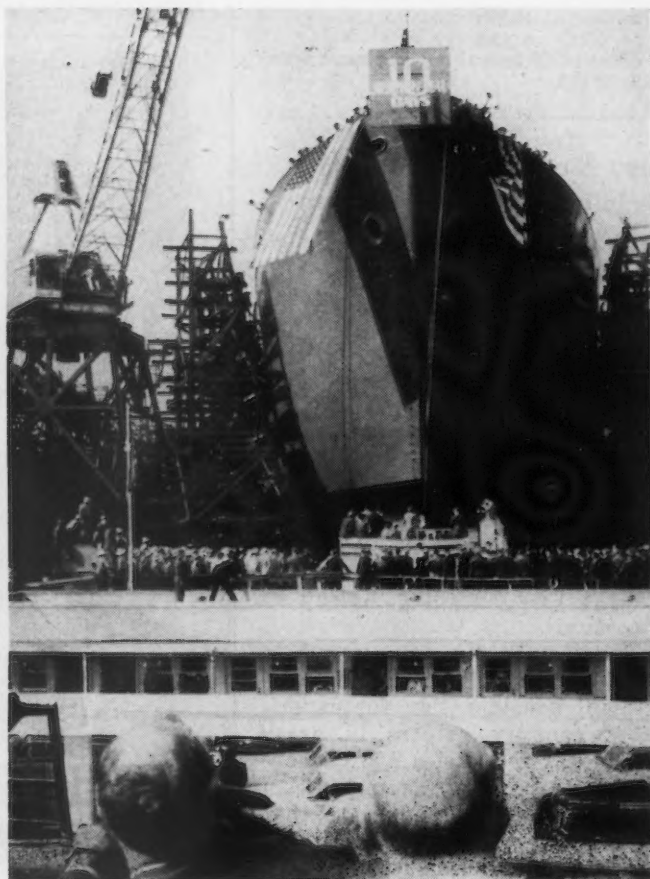
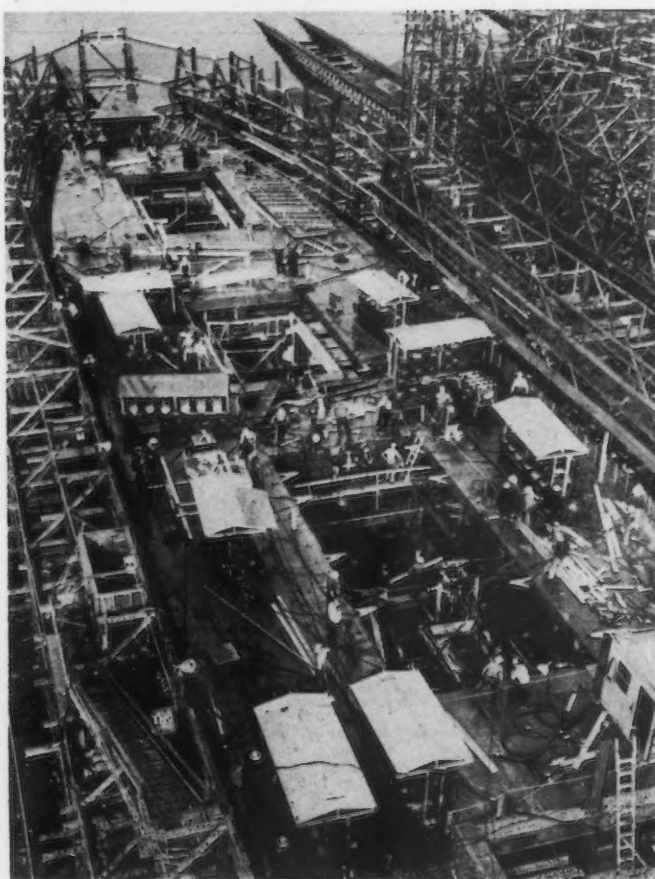
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Write for the Marschke Catalog, to
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10-Day Ship:

WORKERS in Henry J. Kaiser's Portland, Ore., shipyard lay the keel of the 10,500-ton ship Joseph N. Teal, push construction feverishly on the fifth day (lower left) and on the 10th day (lower right) set a new 10-day launching record. (World War I's best time—212 days)

PRP To Continue For Some Months, WPB Leaders Hold

Washington

••• PRP is not going to be pushed out of the picture with a single shove. Ernest Kanzler, WPB Director General for Operations, told THE IRON AGE that this is not possible. He said that PRP always will be used for such supplies as bolts, nuts, rivets and bearings, or any other product that must be "on the shelf" in anticipation of demand.

Mr. Kanzler indicated that the warrant system, which contemplates budgeting and scheduling through the obtaining of bills of material from product manufacturers, would be applied to the larger prime contractors and their suppliers. He added that a plan to enmesh the steel quota system with the overall warrant scheme is under study. This is just the thing that officials of the WPB Iron and Steel Branch fear. They contend that each raw material should be allocated on the basis most suitable to it. It is their claim that too great a modification of the steel quota system would destroy its effectiveness.

It is reported that an educational program lasting three months will be started in December to prepare industry for the shift from PRP to the warrant system. WPB Chairman Donald M. Nelson at a press conference last Thursday said that PRP is the ideal media "where you are working on inventories on an in and out basis." He said that PRP will be the operating plan for small metal consumers with the warrant system used in the case of larger metal users. Asked how much war production will be under PRP, Mr. Nelson said he couldn't tell but he made an estimate of 25 per cent.

Meanwhile in answer to critics, Mr. Nelson announced that the first certified PD-25A's PRP application forms were being returned as of Sept. 30. Letters were sent out by Mr. Kanzler to 30,000 manufacturers which will have the effect of severely cutting the civilian economy and even partially stripping military items. In this sharp paring steel demand was fitted to production. If ad-

hered to by the various WPB branches that parcel out steel the amount authorized for the fourth quarter to be put in process should not exceed supply.

The fourth quarter carbon steel demand was sliced 4,300,000 tons by the Requirements Committee. This cut was arrived at by tailoring the user to the cloth. Requirements, exclusive of export demand, were found to be 15,400,000 tons, while the estimated supply was 11,100,000 tons.

Criticism of returns of certified PD-25A's was based on the fact that under the original time table approved by the PRP branch, the processing of PD-25A's was not to be started until after Nov. 1. This situation, it was pointed out, would prevent the adjustment of demand to output. This was so, it was urged, because manufacturers who have not received certified PD-25A's may accept delivery of 40 per cent of the amount asked for under PD-25A on Oct. 1, and an additional 30 per cent on Nov. 1 if their certificates were not returned. An amendment to Priorities Regulation No. 11 changed the interim procedure for November deliveries so that a manufacturer might not put in process more than 70 per cent of the amount of material he used during July and August, 1942.

In making the announcement that authorizations to receive materials under PRP are being returned to applicants with changes in the original materials requests conforming to the Requirements Committee's determinations, Mr. Nelson also explained that PRP application forms for the first quarter of 1943 have been approved. He said that they will be mailed out as soon as they are received in quantity from the printer. The schedules for January-March, 1943, calls for receiving applications and returning the certificates to applicants some time in advance of the beginning of the quarter. All material authorizations for the fourth quarter will be covered by preference ratings in the AA series, and a new AA-5 rating has been estab-

lished to be applied in certain instances.

Mr. Nelson pointed out that all military items and many essential non-military items already were covered by ratings of AA-1 and AA-4. Some of the non-military items included among the quantity determinations of the Requirements Committee were not previously rated in the AA category. To up-rate such items into AA-4, Mr. Nelson said, would put them in competition with military items already in that category. Rather than do this, the new classification of AA-5 was established. It will include any balance of the amounts on approved schedules to which the present PRP pattern ascribes a rating lower than AA-4.

A figure representing the overall percentage reduction in requests for authorizations under PRP and estimated requirements of companies not under PRP cannot be reached, Mr. Nelson said, because the factors in individual cases are so varied that they cannot be reduced to a common denominator. However, certain basic principles were applied in all cases in arriving at particular cutbacks. These included:

1. Total requests were kept within total supply.
2. End-use was considered so that items most urgently needed were provided for first, receiving the least reduction.
3. Material inventory was considered so that reduction in requests was possible in cases where companies had sufficient stock in hand to permit such cuts.
4. Reductions in requests for other materials were considered in making final allocation of a particular material, so that each individual cut was as nearly as possible in proper proportion to the others.

Requirements for all of the items for which carbon steel is used, from cutlery to bombs, were re-examined. Reductions first were made among those items which were not for direct military use. For instance, the armed services have ordered large quantities of sewing machines, cutlery, etc., which are military items in the sense they are purchased for use by the services, but they are not for direct military use in the sense that a bomb or airplane is.

The armed services were re-

sponsible for cutting direct military requirements. All agencies concerned with the adjusted program, however, agreed on the final totals allowed for items using carbon steel. By operating under the principle that direct military items should come first, the cuts among

these items were the smallest, while cuts among items of less military urgency were larger. Similarly, among non-military items, those most essential to civilian economy were cut less, while others were cut more or wholly eliminated.



Routing the PD-25A Explained in Detail

••• As shown on the adjacent two-column chart, each PRP unit receives one set of Form PD-25A applications for the fourth quarter. A set consists of eight copies made up of two groups of four copies each. The eighth copy is the applicant's work copy on which he sets up his "dummy" report.

The seventh copy is the applicant's file copy on which he retains a permanent record of the data contained in his application. Six copies are submitted to the War Production Board; the applicant is directed to type his submitted copies twice so that the group consists of two originals and four carbons.

The six copies received by WPB are distributed in the following manner. Immediately following

receipt of the application, Internal Operations notes on each copy a serial number, PRP number, and WPB Branch assignment. Assignment of each application is ordinarily made to the Branch having the majority interest in or jurisdiction over the products listed in Section B, Part 2, of the application. The appropriate sections of the Army and Navy handle applications of manufacturers engaged solely in military production.

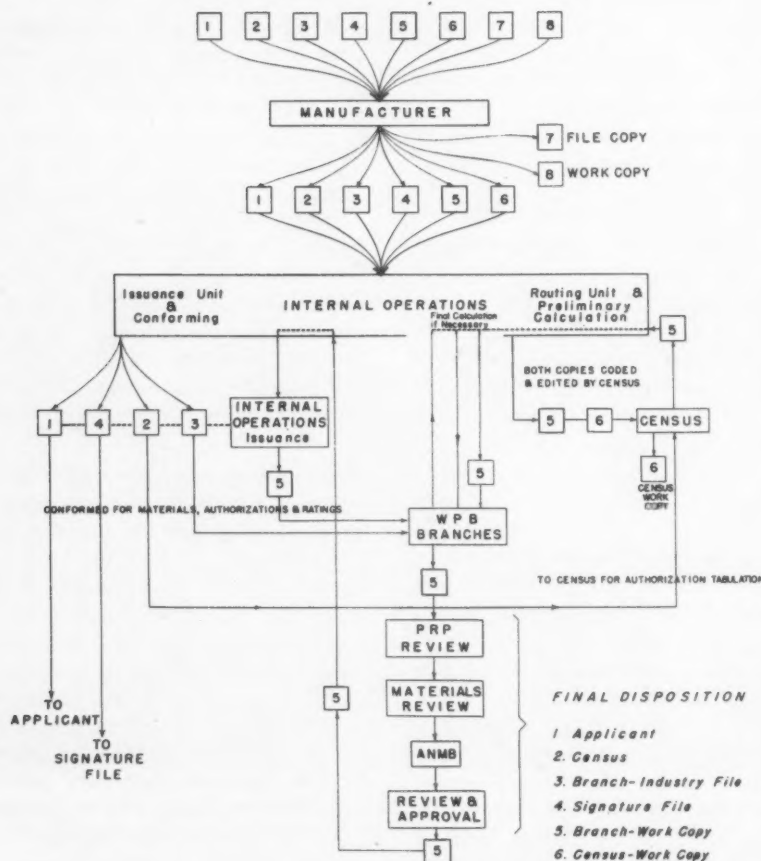
Two copies consisting of an original and a carbon are immediately forwarded to the Bureau of the Census, Division of Current Manufacturers Reports. Both copies are coded and edited by the Census. The carbon is retained by the Census for its tabulation for the Requirements Committee. The original fully conformed is returned to the Division of Internal Operations. Here preliminary calculations are made covering relationships of fourth quarter shipments to second quarter shipments, preference rating distribution for each quarter to shipments, and other significant comparisons. Following the completion of the preliminary calculations, the conformed copy returned from Census is routed to the appropriate WPB Branch or Service unit.

The branches immediately undertake a tabulation of second quarter use and fourth quarter requirements for certain critical metals listed by the Requirements Committee. The tabulation is prepared by product groups within each Branch. Inasmuch as the branches work with conformed copies showing the Census coding of products into the appropriate product groups, the summary of Branch tabulations by product groups may be compared directly with the Census tabulation.

The application remains in the branches pending the receipt of processing directives. Once the directives have been received, the branches process the applications which then pass through a series of reviews which include that by the Materials Branches, by the ANMB, and by the Review and Approval Branch. The case then goes back to the issuance Unit of the Division of Internal Operations, where the 4 copies of the original application are conformed to the processed copies.

The ultimate disposition of
(CONTINUED ON PAGE 159)

FLOW OF PD-25A FORMS: The large volume of paper which must be handled in connection with PD-25A applications presents a serious control problem. This chart shows the routing of the forms which the War Production Board receives. The system is described more fully in the adjoining article.



THE IRON AGE WAR PRIORITIES GUIDE

... Published by THE IRON AGE for use of industry and government offices dealing with wartime controls over distribution of materials and machinery

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ABOUT REVISIONS: Each week revisions for keeping this Priorities and Allocation Guide up-to-date appear in THE IRON AGE. See THE IRON AGE every week for details and official interpretations of War Production Board orders governing the metal industries, and for details of priority system changes now being studied.

THE IRON AGE, 100 E. 42nd Street, New York, N. Y.

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Directory of WPB Regional Offices

State and City	Name	Title	Address
ALABAMA			
Birmingham	Lt. Col. James P. Barnes	District manager	322 Phoenix Bldg.
ARIZONA			
Phoenix	Lee G. Browne	District manager	408 Social Security Bldg.
Tucson	William I. Walsh	Production manager	Union Bond & Tr. Bldg.
ARKANSAS			
Fort Smith	Frank P. DeLarzel	Contract dist. mgr.	Kelly Bldg.
Little Rock	Charles S. Christian	Priority branch mgr.	Rector Bldg.
	Alfred M. Lund	Contract dist. mgr.	Rector Bldg.
CALIFORNIA			
Fresno	John S. Moffat	Div. mgr., priorities	314-318 Mattei Bldg.
Los Angeles	Alexander McDonald	District manager	1031 South Broadway
Oakland	William P. Collins	Division manager,	209 Financial Center
		contract distribution	Bldg.
	Harry H. Daley	Div. mgr., priorities	209 Fin. Center Bldg.
Sacramento	C. M. Hinds	Div. mgr., priorities	Farmers & Mechanics
			Bldg.
	Orlando McCraney	Division manager,	Farmers & Mechanics
		contract distribution	Bldg.
	G. R. Winkler	Division manager,	Farmers & Mechanics
		general salvage	Bldg.
San Diego	Paul C. Farmer	Div. mgr., priorities &	510 Union Bldg.
		contract distribution	
San Francisco	Harry H. Fair	Regional director	1355 Market St.
COLORADO			
Denver	Virgil L. Board	Priorities dist. mgr.	617 Kittredge Bldg.
	Leslie A. Miller	Regional director	617 Kittredge Bldg.
Pueblo	Dwight F. Stalker	Contract dist. mgr.	Star-Journal Bldg.
	Stanley M. Walker	Priorities manager	Star-Journal Bldg.
CONNECTICUT			
Bridgeport	Raymond L. French	District manager	144 Golden Hill Street
Hartford	Earle L. Milliken	District manager	199 Ann Street
New Haven	Charles A. Newton	District manager	152 Temple Street
DELAWARE			
Wilmington	Bradley L. Giest	District manager	314 Pennsylvania Bldg.
FLORIDA			
Jacksonville	George H. Andrews	District manager	730 Lynch Bldg.
Miami	Forrest D. Banning	Branch manager,	701 Congress Bldg.
		contract distribution	
	Harold E. Enyeart	Priorities manager	701 Congress Bldg.
Tampa	Herbert A. Brennan	Priorities manager	901 Wallace So. Bldg.
	Arthur B. Hale	Branch manager,	901 Wallace So. Bldg.
		contract distribution	
GEORGIA			
Atlanta	Frank H. Neely	Regional director	116 Candler Bldg.
IDAHO			
Boise	Raymond J. Briggs	District manager	Capital Security Bldg.
ILLINOIS			
Chicago	Edmund H. Eitel	Priorities dist. mgr.	20 North Wacker Drive
	Joseph L. Overlock	Regional director	20 North Wacker Drive
Decatur	Paul Fields	Mgr. branch office	308 Standard Office Bldg.
Peoria	Ralph W. Pritchard	District manager	2nd floor, Alliance Bldg.
Rockford	James R. Marks	District manager	621 Gas-Electric Bldg.
Springfield	Edward F. Gerrity	Mgr. branch office	407 Leland Office Bldg.
INDIANA			
Evansville	Ralph C. Hubert	Mgr. branch office	8 Koenig Bldg.
Fort Wayne	George A. Dinnen	Mgr. branch office	410 Utility Bldg.
Gary	William Barndollar	District manager	926 Gary St. Bank Bldg.
Indianapolis	Albert O. Evans	Priorities dist. mgr.	Circle Tower Bldg.
	Frank Hoke	District manager	Circle Tower Bldg.
South Bend	Howard E. Richardson	Mgr. branch office	206 City National Bank
			Bldg.
IOWA			
Davenport	William Ogden	District manager	404 Kahl Bldg.
Des Moines	George Beese	District manager	600 Liberty Bldg.
KANSAS			
Wichita	H. G. Hartzell	Contract dist. mgr.	Union Nat'l Bank Bldg.
KENTUCKY			
Louisville	J. T. Howington	Regional manager	400 Tova Bldg.
LOUISIANA			
New Orleans	Allan T. Dusenbury	District manager	423 Canal Bldg.
Shreveport	George F. Cunningham	District manager	915 Giddens-Lane Bldg.
MAINE			
Bangor	Charles E. Walker	Associate industrial	44 Central Street
		specialist in charge	
Portland	E. C. Hyde	District manager	142 High Street
MARYLAND			
Baltimore	G. W. Creighton	District manager	Baltimore Trust Bldg.
MASSACHUSETTS			
Boston	Edward V. Hickery	District manager	17 Court Street
	W. H. Wheeler, Jr.	Regional director	17 Court Street
Fall River	Arthur B. Sherman	District manager	7 N. Main Street
Lowell	William E. Stanwood	District manager	8 Merrimac Street
Springfield	Howard G. Philbrook	District manager	1200 Main Street
Worcester	Dwight C. Daniels	District manager	340 Main Street

State and City	Name	Title	Address
MICHIGAN			
Detroit	Ernest C. Kanzler	Regional director	7310 Woodward Ave.
	Samuel H. Worrell	Priorities dist. mgr.	7310 Woodward Ave.
Grand Rapids	Ray M. Olds	District manager	1004 Michigan National
			Bank Bldg.
Iron Mountain	George Wallner	District manager	400 Commercial Nat'l
			Bank
Saginaw	Raymond G. Donahue	District manager	614 Peoples Building &
			Loan Assn. Bldg.
MINNESOTA			
Duluth	Arthur J. Newman	District manager	307 Christie Bldg.
Minneapolis	Bruce W. Burroughs	Acting regional dir.	334 Midland Bank Bldg.
	Willard F. Kiesner	Mgr. priorities section	334 Midland Bank Bldg.
MISSISSIPPI			
Jackson	A. G. McIntosh	Acting prod. mgr.	605 Tower Bldg.
MISSOURI			
Kansas City	L. E. Crandall	Acting regional dir.	611 Mutual Bldg.
	Charles B. Schaeffer	Priority branch mgr.	Interstate Bldg.
	Roy W. Webb	Contract dist. mgr.	611 Mutual Bldg.
St. Louis	Frank J. McDevitt	Contract dist. mgr.	Paul Brown Bldg.
MONTANA			
Helena	Oscar A. Baarson	District manager	Power Block Bldg.
NEBRASKA			
Omaha	Victor H. Black	Priority branch mgr.	Grain Exchange Bldg.
	Arthur W. Walker	Contract dist. mgr.	Grain Exchange Bldg.
NEVADA			
Reno	Edwin S. Bendor	Production manager	Saviers Bldg.
NEW JERSEY			
Camden	Frederick Cohen	District manager	300 Broadway
Newark	Laurence C. Ward	Acting district mgr.	Globe Bldg.
Trenton	R. E. Carroll	District manager	1102 Broad St., Bank
			Bldg.
NEW HAMPSHIRE			
Manchester	Thomas H. Hagan		Amoskeag Industry
			Bldg.
NEW MEXICO			
Albuquerque	John J. Ginner	Acting district mgr.	103½ W. Central Ave.
Santa Fe	Fay Guthrie	General salvage	P. O. Box 1661
		district manager	
NEW YORK			
Albany	Frederic H. Holman	Contract distribution	Standard Bldg.,
		manager	122 State Street
Brooklyn	Emile Z. Weinberg	Contract distribution	16 Court Street
		manager	
Buffalo	Paul R. Smith	Priorities dist. mgr.	1138 Rand Bldg.
	Miles S. Whitney	Contract distribution	918 Rand Bldg.
		manager	
New York	John P. Maguire	Regional director	Chanin Bldg.,
			122 E. 42nd St.
East Rochester	H. Dudley Swim	District manager	Chanin Bldg.
	Mahlon H. Gregg	Contract distribution	119 Main St.
		manager	
Syracuse	Thurlow D. Harter	Contract distribution	224 Harrison St.
		manager	
Utica	Earl R. Mason	Acting district mgr.	First Natl. Bank Bldg.
NORTH CAROLINA			
Charlotte	J. E. MacDougall	District manager	1616 Liberty Life Bldg.
Raleigh	Noon Hudson	Acting priorities mgr.	P. O. Box 2658
	Thomas J. Love	Acting manager,	P. O. Box 2658
		contract distribution	
	Samuel A. Silver	Associate commercial	P. O. Box 2658
		representative, mining	
	James B. Vogler	Commercial repre-	P. O. Box 2658
		sentative, conserva-	
		tion manager	
NORTH DAKOTA			
Bismarck	Paul W. Fawcett	Acting district mgr.	14 First Natl. Bank Bldg.
OHIO			
Canton	E. O. Kuendig	District manager	601 Commerce Bldg.
Cincinnati	E. C. Henlein	Deputy regional	804 Union Trust Bldg.
		director	
Cleveland	J. B. French	Regional priority mgr.	1300 Union Comm. Bldg.
	John C. Virden	Regional director	1300 Union Commerce
			Bldg.
Columbus	B. C. Zuhare	District manager	513 East Town St.
Dayton	H. B. Doty	District manager	129 South Ludlow St.
Toledo	A. E. Buchenberg	District manager	833 Security Bank Bldg.
Youngstown	Leif Oyen	District manager	1002 Union National
			Bank Bldg.
OKLAHOMA			
Oklahoma City	Charles F. Aurand	District manager	414 Key Bldg.
Tulsa	Alfred H. Ballin	District manager	602 Petroleum Bldg.

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State and City	Name	Title	Address
OREGON			
Portland	John G. Barnett	Production manager	Bedell Bldg.
	J. Fred Bergesch	Priorities dist. mgr.	Bedell Bldg.
PENNSYLVANIA			
Allentown	Ernest R. Follin, Jr.	District manager	506 Hamilton St.
Chester	Abbott Smith	District manager	12-14 East 5th St.
Erie	H. B. Joyce	District manager	Erie Trust Co. Bldg.
Harrisburg	Ritchie Lawrie, Jr.	District manager	Blackstone Bldg.
Johnstown	J. S. Wagoner	Acting district mgr.	U. S. Natl. Bank Bldg.
Lancaster	Ritchie Lawrie, Jr.	District manager	Woolworth Bldg.
Norristown	Feliz P. Gross	District manager	306-08 Norristown-Penna. Trust Bldg.
Philadelphia	Orville H. Bullitt	Regional director	1617 Penna. Bldg.
Pittsburgh	F. R. Denton	Deputy regional director	800 First National Bank Bldg.
Reading	John A. Archer	Contract distribution manager	615 Penn Sta.
Seranton	W. H. Pierce	District manager	First Natl. Bank Bldg.
Wilkes-Barre	W. H. Pierce	District manager	53 West Market St.
Williamsport	John H. McCormick	District manager	120 West 4th St.
York	Richard S. Cole	District manager	Yorktowne Hotel
RHODE ISLAND			
Providence	John C. Nash	District manager	530 Industrial Trust Bldg.
SOUTH CAROLINA			
Columbia	Tonquin E. Lagrone	Conservation supervisor	204-206 Manson Bldg.
	Duncan E. McDuffie	Contract dist. mgr.	204-206 Manson Bldg.
SOUTH DAKOTA			
Sioux Falls	James G. Scott	Acting district mgr.	308 Boyce Greeley Bldg.
TENNESSEE			
Chattanooga	Dyer Butterfield	Acting priorities mgr.	903 James Bldg.
	Paul E. Shacklett	Acting contract distribution manager	910 James Bldg.
Knoxville	John A. Hunter	Acting priorities mgr.	204-205 Goode Bldg.
	W. W. Mynatt	Acting contract distribution manager	
Memphis	Arthur M. Field	Acting contract distribution manager	2112 Sterick Bldg.
	John K. Lester	Priorities manager	2110 Serriek Bldg.
Nashville	George S. Gillen	Priorities manager	1018 Stahlman Bldg.

State and City	Name	Title	Address
TEXAS			
Dallas	A. J. Langford	District manager	910 Fidelity Bldg.
	R. Eugene Risser	Regional director	910 Fidelity Bldg.
El Paso	Robert C. Stryker	District manager	222 El Paso National Bank Bldg.
Houston	George L. Noble	District manager	908 Electric Bldg.
San Antonio	Carl L. Pool	District manager	801 Majestic Bldg.
UTAH			
Salt Lake City	Ralph E. Bristol	District manager	David Keith Bldg.
VERMONT			
Montpelier	Lester E. Richwagon	District manager	12 State St.
VIRGINIA			
Norfolk	Charles F. Rhodes	Acting contract distribution manager	526 Dickson Bldg.
Richmond	Overton D. Dennis	District manager	10 South 5th St.
Roanoke	L. E. Gulliford	Acting contract distribution manager	116½ Kirk Ave.
WASHINGTON			
Seattle	Harry Martin	Production manager	White Henry Stuart Bldg.
	William D. Shannon	Priorities dist mgr.	White Henry Stuart Bldg.
Spokane	Lars Carlson	Division manager, contract distribution	Old National Bank Bldg.
	Clifford Ruud	Division manager, priorities	Old National Bank Bldg.
WEST VIRGINIA			
Charleston	E. C. McClees	District manager	24 Capital Bldg.
Clarksburg	A. H. Cooper	Regional manager	Empire National Bank Bldg.
Huntington	F. B. Enslow	District manager	West Virginia Bldg.
Wheeling	E. C. Drake	District manager	Fidelity Bldg.
WISCONSIN			
Appleton	Paul W. Romig	Mgr. branch office	341 West College Ave.
Eau Claire	Dorance W. Walters	District manager	128½ Graham Ave.
Madison	J. D. Howard	Mgr. branch office	405 Washington Bldg.
Milwaukee	Frank J. Tharinger	Acting district mgr.	7048 Plankinton Bldg.
Wausau	Herbert C. Crane	Acting district mgr.	407 Third Street
WYOMING			
Casper	William F. Wilkerson	Acting mgr., contract distribution	P & R Bldg.
Cheyenne	Edward S. Moore, Jr.	General salvage district manager	State Capitol Bldg.

List of Priorities Regulations

Regulation No.	Section No.	Title of section or nature of priorities action
REGULATION No. 1		
<i>First issued 8-27-41</i>		
<i>As amended 12-23-41</i>		
	944.1	Definitions.
	944.1a	Certain Defense Orders Rated A-10.
	944.2	Compulsory Acceptance of Orders.
	944.3	Rejected Orders.
	944.4	Assignment of Preference Ratings.
	944.4a	Duration of Preference Rating Orders.
	944.5	Sequence of Preference Ratings.
	944.6	Doubtful Cases.
	944.7	Sequence of Deliveries.
	944.8	Delivery Schedules.
	944.9	Deferred Deliveries.
	944.10	Allocations and Limitations.
	944.11	Use of Material Obtained under Allocation or Preference Rating.
	944.12	Intra-Company Deliveries.
	944.13	Effect of Rule, Regulation or Order.
	944.14	Inventory Restriction.
	944.15	Records.
	944.16	Audit and Inspection.
	944.17	Reports.
	944.18	Violations and Penalties.
	944.19	Relief in Exceptional Cases.
	944.20	Notification of Customers.
	944.21	Effect and Scope of Regulation; Ratification of Prior Acts.
Interpretation No. 1	944.2	Compulsory Acceptance of Orders.
<i>Issued 5-7-42</i>	944.7	Sequence of Deliveries.
Amendment No. 3	944.1	Definitions.
<i>Issued 6-26-42</i>	944.2	Compulsory Acceptance of Orders.
	944.4	Assignment of Preference Ratings.
	944.5	Sequence of Preference Ratings.
	944.7	Sequence of Deliveries.
	944.13	Effects of Rule Regulation or Order.
	944.15	Record.
As amended 6-26-42	944.7	Procedure for deliveries bearing same preference rating.
Interpretation No. 1		
<i>Issued 7-21-42</i>		
Amendment No. 4	944.5	Sequence of preference ratings.
<i>Issued 8-10-42</i>	944.7	Effect on production schedules of rated orders.
REGULATION No. 2		
<i>Issued 9-9-41</i>		
	944.22	To Make Mandatory All Preference Ratings and Validate Certain Certificates.
REGULATION No. 3		
<i>Issued 1-12-42</i>		
	944.23	To Provide for the Use of Revised Preference Rating Certificates.
Amendment No. 1	944.23	
As amended 6-10-42	944.23	Establishing Uniform Method of Application and Extension of Ratings.
Further amended 6-26-42	944.23	
Interpretation No. 1	944.23	Explains extension of ratings by prime suppliers Punder PRP, and certification and acceptance of orders.
<i>Issued 7-14-42</i>		

Regulation No.	Section No.	Title of section or nature of priorities action
REGULATION No. 4		
<i>Issued 1-20-42</i>		
	944.24	To Validate Certain Forms of Preference Rating Certificates.
REGULATION No. 5		
<i>Issued 2-5-42</i>		
	944.25	Reproduction of Forms and Orders.
REGULATION No. 6		
<i>Issued 2-11-42</i>		
	944.26	Regulations Applicable to Operation of the Priorities System; Abolition of Priorities Critical List.
REGULATION No. 7		
<i>Issued 2-17-42</i>		
	944.27	Signature of Endorsements.
Interpretation	944.28	Interpretation of Limitation and Conservation Orders With Respect to Assignability of Quotas.
REGULATION No. 8		
<i>Issued 3-16-42</i>		
	944.29	Revokes Certain Reporting Requirements.
Amendment No. 1	944.29	Deletes Order P-56-a; adds Order P-56.
Amendment No. 2	944.29	Deletes Orders P-19, P-19-a, P-19-c, and P-19-h from Appendix B.
REGULATION No. 9		
<i>Issued 4-25-42</i>		
	944.30	Export Ratings Assigned on Form PD-311.
REGULATION No. 10		
<i>Issued 6-1-42</i>		
	944.31	Allocation Classification System.
Amendment No. 1	944.31	Exceptions to Certain Purchases.
Amendment No. 2	944.31	Defers necessity of indicating symbols on purchase orders to 8-31-42.
REGULATION No. 11		
<i>Issued 6-10-42</i>		
	944.32	Production Requirements Plan.
Amendment No. 1	944.32	Production Requirements Plan.
Amendment No. 2	944.32	Production Requirements Plan.
Interpretation No. 1	944.32	Production Requirements Plan; Metal Mills.
Exemption No. 1	944.32a	Exemption from filing applications for third quarter of 1942 by class I producers.
Amendment No. 1	944.34a	Exempts class I producers outside continental U. S.
Interpretation No. 2	944.32	Permits manufacturers under PRP, to request suppliers to retain orders on the books.
Amendment No. 3	944.32	Provides for extension of ratings.
Exemption No. 2	944.32b	Exempts from limitations certain materials.
Amendment No. 4		Interim procedure for Class I producers under PRP.
<i>Issued 9-19-42</i>		
REGULATION No. 12		
<i>Issued 6-26-42</i>		
	944.33	Establishing Re-rating Procedures Including Use of "Re-rating Direction: From PD-4X" and "Re-rating Certificate: Form PD-4Y."
As amended 8-10-42	944.33	Amplifies re-rating procedures.
REGULATION No. 13		
<i>Issued 7-7-42</i>		
	944.34	To release for sale inventories of materials.
As amended to Sept. 23		Covers special sales of idle or frozen materials.
<i>Issued 9-23-42</i>		
REGULATION No. 14		
<i>Issued 7-8-42</i>		
	944.35	Applicability to Canada of provisions regarding military requirements.

Description of Priority Orders

(See "PRIORITY ORDER 'PD' FORMS," page 132 for description of forms listed under column Related Form. Obsolete forms are starred (*) in checklist beginning on page 132)

"M" Orders

Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
M-1-d Supersedes M-1-c	Aluminum Scrap	Regulates melting, processing, smelting, use, contamination, sale, and toll agreements.	PD-40-a, PD-114, PD-249, PD-272	1-7-42	Aluminum and Magnesium	G. W. Reed
Amendment No. 1		Regulates sale and certification		5-2-42		
M-1-e	Aluminum	Restricts use in specified items to defense orders.		1-23-42	Aluminum and Magnesium	C. B. Batman
Revocation		Revokes order M-1-e		8-18-42		
M-1-f Supersedes M-1, M-1-a	Aluminum	Further restricts delivery, processing, use, inventory and toll agreements.	PD-26-a, PD-40-a, PD-97, PD-114	2-17-42	Aluminum and Magnesium	G. W. Reed
Revocation		Revokes order M-1-f		8-18-42		
M-1-g	Aluminum: Pigments, Paints.	Restricts use, manufacture, acquisition, and disposition.	PD-312, PD-313	3-10-42	Chemicals	C. M. Luke
M-1-h	Aluminum	Allocates supply of alumina and bauxite.	PD-567, PD-568	7-7-42	Aluminum and Magnesium	P. D. Helser
M-1-i Revokes M-1-e, M-1-f	Aluminum	Establishes allocation procedure; specifies requirements relative to placement of orders with, and acceptance of orders by producers, smelters and fabricators; establishes list of eligible items; provides temporary exception for military items; regulates dead stock and tolling.	PD-26-a, PD-40-a, PD-97, PD-114, PD-500	8-18-42	Aluminum and Magnesium	C. B. Batman
M-2-b Supersedes M-2, M-2-a	Magnesium		PD-26-m, PD-40-m, PD-173, PD-114, PD-603, PD-174, PD-249	11-14-41	Aluminum and Magnesium	P. D. Helser
Extension No. 1				4-25-42		
M-6-a Supersedes M-6 Amended and extended	Nickel	Restricts deliveries to authorized amounts.	PD-27 Schedule I, Sched. II	9-30-41	Nickel	J. R. Stalker
		Restricts delivery and acceptance to authorized amounts.	PD-27-a	3-30-42		
M-6-b	Nickel	Restricts use in List A items during limitation period to 50% of use in base period, permits specific uses.		1-20-42	Nickel	H. A. Schaeffer
As revised Oct. 3		Uses restricted to implements of war, except where authorized.				
M-6-c	Nickel Scrap	Regulates deliveries, melting, toll agreements, segregation.	PD-149, PD-150, PD-151, PD-394	4-22-42	Nickel	R. E. Beers
As amended 6-19-42	Nickel Scrap and Secondary Nickel.	Scrap covered by order defined as scrap containing 1% nickel or over and other provisions amended to conform with the alloy steel scrap segregation order.		6-19-42		
M-8	Cork	Restricts use and finally prohibits.	PD-29, PD-196	5-31-41	Cork and Asbestos	F. W. Gardner
M-8-a	Cork	Establishes reserve for allocation.	PD-29	10-1-41	Cork and Asbestos	F. W. Gardner
Interpretation No. 1				10-16-41		
Amendment No. 1				3-26-42		
Amendment No. 2		Removes special limitation on processing and delivery of finished corks.		5-30-42		
M-9 Superseded by M-9-a Amendment No. 1 Amendment No. 2	Copper	Regulates delivery, acceptance, refining, allocation.	PD-12, PD-37, PD-59, PD-60	5-29-41	Copper	John Douglas
		Restrictions applied to alloys, establishes reserve for allocation.		6-10-41		
				7-9-41		
M-9-a Supersedes M-9 as amended Extension Amended	Copper Base and Copper Base Alloys	Restricts delivery and acceptance, allocates supply.		8-2-41	Copper	John Douglas
		Regulates delivery, acceptance, toll agreement, foreign and domestic copper.		12-31-41		
				1-13-42		

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
As amended super-sedes M-9-a		Regulates delivery, acceptance, toll agreements, foreign and domestic copper.	PD-76, PD-59-c, PD-59-d, PD-518, PD-123, PD-227, PD-123-a PD-120, PD-121, PD-123-b, PD-59	2- 6-42		
Interpretation No. 1		Lifts restrictions on deliveries to warehouses.		2-19-42		
Amendment No. 2		Regulates deliveries by all others except refiners.		2-15-42		
Amended 5-7-42		Order extended to 7-31-42		5- 7-42		
Extension No. 1		Establishes allocation control, and restricts delivery and acceptance of copper and deliveries of brass mill or wire mill products, deliveries of foundry products or copper base alloy ingots, and toll agreements.	PD-59	6-30-42		
Amended				8- 1-42		
M-9-b	Copper Scrap and Copper Base Alloys scrap.	Regulates delivery, acceptance, melting, inventory, toll agreements.	PD-59	9-30-41	Copper	Mich'l Schwarz
As amended super-sedes M-9-b and revokes P-61		Regulates use, melting, disposition, inventory, toll agreements.	PD-130, PD-126	12-31-41		
Amended 3-31-42		Provides further regulation	PD-249, PD-121, PD-226, PD-226a, PD-121-b	3-31-42		
Amended 5-9-42		Further regulates delivery, melting, processing, toll agreements, casting, ingots.	PD-518, PD-59	5- 9-42		
Amended		Restricts delivery or acceptance and melting or processing of scrap or alloy ingots; delivery to or acceptance by foundries and makers of alloy ingots; disposal of scrap, toll agreement; and acceptance of copper-base alloys or castings, including alloy ingots, made therefrom.	PD-59, PD-226, PD-249	8- 3-42		
Amendment No. 1		Amends basis of, application for, and proof of authorization regulations; provides for certification of purchase of alloy ingots, copper scrap or copper base alloy scrap.		8- 7-42		
M-9-c	Copper	Further limits use to specified exceptions.	PD-167, PD-172, PD-189, WPB-843	10-21-41	Copper	Mich'l Schwarz
Amended		Prohibits and further limits use		11- 1-41		
Amended 12-10-41		Permits completion of specified items.		12-10-41		
Amendment		Corrects typographical error in M-9-c as Amended 12-10-41.		12-13-41		
Interpretation No. 1		Clarifies use of copper in radio industry.		12-26-41		
Amendment		Adds health supplies to exempted items.		1-13-42		
Amendment		Adds essential railroad rolling stock parts to exempted items.		2-28-42		
Interpretation No. 2		Clarifies use of bronze powder, paste, leaf or ink in printing.		3-28-42		
Amendment		Further regulates insect screens		4- 9-42		
Amended 5-7-42		Further restricts manufacture and delivery with certain special provisions.	PD-426	5- 6-42		
Amendment No. 1		Changes restrictions on deliveries and production.		5-15-42		
Interpretation No. 3		Clarifies use in hand saws		5-19-42		
Interpretation No. 4		Further clarifications on the restricted use of copper in pipes and fittings for water supply and distribution systems.		6-15-42		
Amendment No. 2		Exempts specified products		6-17-42		
Amendment No. 3		Adds military exemption list of binoculars and valves for ship use.		7-10-42		
Amendment No. 4		Adds to Military Exemption List, and establishes temporary Military Exemption List effective until 9-1-42.		7-29-42		

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
Amendment No. 5		Amends use restrictions, revises general delivery and repair restrictions; amends list A; adds list A-2.		8- 7-42		
Amendment No. 6		Establishes permanent military exemption list.		8-31-42		
M-9-c-1	Copper	Curtails and finally limits use in shoe findings.	PD-259, PD-260, PD-261	1-23-42	Copper	Mich'l Schwarz
Amendment No. 1		Modifies use in shoe production		5-23-42		
M-9-c-2	Copper	Limits use, delivery and acceptance in jewelry.		4- 4-42		
M-9-c-3	Copper	Curtails and finally prohibits use in printing industry.		3-28-42		
Amended 12-27-41 Supersedes similar provision in M-9-c		Further curtails and finally prohibits use and sale of bronze powder, bronze paste, bronze ink, and bronze leaf.				
Amendment		Prohibits sale of bronze powder by manufacturer.		5-30-42		
M-9-c-4	Copper	Restricts the installation and delivery of copper or copper base alloy pipe or tubing and/or building material after 7-22-42, with specified exceptions.		7-22-42	Copper	Mich'l Schwarz
M-10	Polyvinyl chloride.	Prohibits delivery and processing; allocates production to defense.	PD-7, PD-33, PD-36	6- 9-41	Chemicals	F. H. Carman
Amendment No. 1, Extension No. 1		Prohibits delivery and acceptance; allocates entire production.		12-31 -41		
Amendment No. 2		Defines polyvinyl chloride		4-29-42		
M-11	Zinc	Regulates use, delivery, acceptance, inventory, toll agreements, establishes reserve.		7- 1-41	Zinc	Myron Trilsch
Amendment		Establishes minimum and maximum shipments.	PD-50, PD-50-a	7- 1-41		
Interpretation		Explains applicability to Pri. Reg. No. 1.		9-15-41		
Amendment		Directs amounts of metallic zinc, zinc oxide and zinc dust to be set aside monthly by producers.		10-16-41		
Amended 5-1-42 (Revokes M-11-b, M-11-c, M-11-d, M-11-e, M-11-f, M-11-g, M-11-h, M-11-i, M-11-j)		Regulates delivery, acceptance, remelting, toll agreements, substitution, reexportation.	PD-450, PD-451, PD-452, PD-453	6- 1-42		
M-11-a	Zinc Oxide and Zinc Dust.	Determines July reserve	PD-62	7- 1-41		
Amended		Reestablishes reserve and disposition of balance of supply.		6- 1-42		
M-11-b	Zinc	Limits and finally prohibits use in manufacture of List A items, and curtails use in manufacture of all others with specified exceptions.	PD-500	7-24-42		
Amendment No. 1		Prohibits use of zinc in glass container closures.		10-10-42		
M-11-c to M-11-k	Zinc Oxide and Zinc Dust	Determines monthly reserves		9- 1-41		
M-13	Synthetic rubber	Regulates delivery, acceptance, use, processing and allocation.	PD-7, PD-33, PD-36	6- 9-41	Chemicals	F. H. Carman
Supersedes M-4 entirely						
Amendment No. 1		Adds all types and extends order indefinitely.		12-31-41		
M-14	Tungsten in High Speed Steel.	Limits placing or acceptance of orders, directs allocation.		6-11-41	Iron and Steel	A. O. Fulton
Amendment No. 1 Extension No. 1		Limits to specific proportions the placement, delivery, and acceptance of orders of certain types.		11-29-41		J. P. Larkin
Amendment No. 2		Prohibits cancellation of orders with certain provisions.		12-31-41		
M-15-b	Rubber and Rubber Products.	Restricts use, limits transactions of tires, casings, tubes.	PD-332, PD-216, PD-302, PD-231, PD-330, PD-49, PD-240.	12-10-41	Rubber and Rubber Products.	Dr. H. S. Rogers
Supersedes M-15, M-15-a						
Amendment No. 3 superseded Amendments No. 1 and 2		Prohibits and limits use of rubber and latex.		2- 1-42		
Amendment No. 4		Redefines "rubber"		2- 9-42		
Amendment No. 5		Substitutes revised Lists A, B, C, D		3- 1-42		

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
Amendment No. 6		Adds reclaimed and scrap rubber to order.		3-20-42		
Amendment No. 7 supersedes Amendment No. 5		Substitutes revised Lists A, B, C, D.		4- 1-42		
Amendment No. 8		Substitutes revised Group 14 products in List B as revised 4-1-42 and also adds Group 14 to List F.		4-11-42		
Amendment No. 9		Extends general restrictions to 6-1-41.		4-27-42		
Amendment No. 10		Restricts the importation of any rubber latex, reclaimed or scrap rubber, or balata and products except by Reconstruction Finance Corporation or any subsidiary of that Corporation.	PD-403, PD-407, PD-463	6-19-42		
Amendment No. 11	Rubber and Balata and Products and Materials of which Rubber or Balata is a component.	Brings Balata under restrictions of order.		7-25-42		
Amendment No. 12		Amends and adds to general definitions; amends restrictions on sale of rubber latex, reclaimed rubber and balata; amends general limitation on destruction; prohibits tire regrooving without authorization; restricts purchase and sale of scrap.		8- 5-42		
Amendment No. 13		Removes inventory limitations on accumulation of stocks of reclaimed rubber held by reclaim consumers.		7-25-42		
M-15-b-1	Rubber and rubber products.	Provides specification lists for 10 types of products.		2-11-42	Rubber and rubber prod.	Dr. H. S. Rogers
Amendment No. 1		Revises Lists 6, 7, 9, and 10, and adds List 11.		3-23-42		
Amendment No. 2		Adds List 12 (Insulated wire and cable).		4- 1-42		
Amendment No. 3		Revises List 7 and 9 and adds List 13 (hospital sheeting) and List 14 (miscellaneous articles to fill Army orders).		4- 3-42		
Amendment No. 4		Extends use to specified products		4-11-42		
Amendment No. 5		Adds List 15 (feeding nipples)		5-15-42		
Amendment No. 6		Revised specifications for industrial pneumatic and solid tires, and adds as List 16, rubber insulating tape.		6-12-42		
Amendment No. 7		Adds List 17 setting forth specifications for manufacture of airplane tires.		7- 1-42		
Amendment No. 8		Substitutes revised List 12 of insulated wire and cable and is made applicable to military uses.		7-10-42		
Amendment No. 9		Revises specifications for manufacture of civilian products.		7-21-42		
Amendment No. 10		Changes specifications for manufacture of rubber footwear.		7-21-42		
Correction No. 1		Corrects typographical errors in Amendments Nos. 8 and 10.				
Amendment No. 11		Attaches Revised List 2—soles and heels specification.		8- 5-42		
Amendment No. 12		Revises List B of feeding nipples		8- 3-42		
Amendment No. 13		Revises List 14		8-17-42		
Amendment No. 15		Adds List 19 of specifications for manufacture of rubber covered rollers.		8-15-42		
M-15-c	Tire Rationing Plan.	Places automobile tires and tubes under restriction and authorizes the Office of Price Administration to administer this order.	PD-216	1- 5-41	Tire Rationing O. P. A.	Charles Phillips
Amendment No. 1		Permits new tire and tube transactions with provisions.		1- 2-42		

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
Amendment No. 2		Permits continuation of leasing agreements.		1- 3-42		
Amendment No. 3		Makes Lend-Lease sales subject to restrictions, allocations, and quotas.		1-20-42		
Amendment No. 4		Modifies prohibition of sales on specific truck sizes.		1-15-42		
Amendment No. 5		Further clarifies restrictions on transactions.		1-28-42		
Amendment No. 6		Permits purchase of new tubes to replace air bags for recap and retreading.		2-13-42		
Amendment No. 7		Permits transfer with no change in ownership.		2-16-42		
M-15-d	New Aircraft Tires and Tubes	Restricts transactions by requiring certificates stating necessity of purchase, and requires turning in the replaced tire.			Aircraft	A. G. Nye, Jr.
M-15-f	Rubber—cement and adhesives.	Restricts use, purchase and sale, subject to specified exception.		7-31-42	Rubber and rubber prod.	Dr. H. S. Rogers
M-17	Pig Iron	Establishes reserve pool for allocation, and restricts delivery.	PD-69, PD-70, PD-71, PD-71-a, PD-71-b, PD-71-c, PD-71-d	8- 1-41	Iron and Steel	William Kerber
Letter of 8-14-41		Establishes September pool		8-14-41		
Amendment No. 1		Further clarifies and changes delivery regulations.		10-14-41		
Extension No. 1				11-25-41		
Amendment No. 2 and Extension No. 2		Further regulates delivery		3-28-42		
M-18	Chromium	Regulates delivery, acceptance, inventory.	PD-53-a, PD-53-b, PD-54	7- 7-41	Manganese-Chrome	T. C. Ford
Superseded by M-18-a		Limits the use of oxide in certain production.		8-22-41		
Amendment No. 1		Limits use of oxide and permits allocation.	PD-53-a, PD-53-b, PD-54	11-29-41	Manganese-Chrome	T. C. Ford
M-18-a	Chromium	Limits melting of ferro-chromium		1-13-42		
Supersedes M-18		Limits melting of chromium		2- 4-42		
Amendment No. 1		Order extended until revoked.		7- 1-42		
Amendment No. 3		Prohibits and limits use in specific items.	PD-53-a, PD-54	3-26-42	Chemicals	W. Healey
M-18-b	Chromium, Chemicals	Modifies use and inventory restrictions on chrome pigments.		6-27-42		
As amended 6-27-42		Removes restrictions on uses; limits inventories.		9-30-42		
Amendment		Conserves supply and directs distribution.	PD-158-d, PD-159, PD-158-e, PD-159-d, PD-159-e, PD-159-f	7-26-41	Chemicals	J. C. Leppart
M-19	Chlorine	Restricts delivery and acceptance, establishes reserve pool for allocation.	PD-190, PD-191	12-20-41		
Amendment No. 1		Curtails and prohibits use in specified items.	PD-190-a	2-25-42		
Amended		Extends effective date of order		3- 9-42		
Amendment No. 1		Extends effective date of order		3-30-42		
Amended		Regulates use in certain items, placing of orders, delivery schedules, restrictions on sale and delivery, and inventories; assigns ratings.		5- 1-42		
Supersedes M-19 as amended 2-25-42	Chlorine and Products containing Chlorine	Corrects paragraph (c), subparagraph (1) and paragraph (h)		5-22-42		
Correction		Exempts high test calcium hypochlorite and chloride of lime from restrictions of order.		7- 6-42		
Amendment No. 1		Provides for complete allocation control of high test calcium hypochlorite and chloride of lime.	PD-574	7- 6-42	Chemicals	Stewart W. Varn
M-19-a	Chlorine and Products containing chlorine	Regulates delivery, acceptance, and allocates.	PD-72	7-29-41	Manganese-Chrome	R. J. Rice
M-20	Calcium Silicon	Restricts deliveries to complete allocation.	PD-72	11-29-41		
Superseded by M-20-a		Extends order until revoked.		5-30-42		
M-20-a	Calcium Silicon	Conserves supply and directs distribution.	PD-69, PD-70, PD-99, PD-100, PD-169, PD-99-a, PD-99-b, PD-99-	8- 9-41	Iron and Steel	Clark King
Revokes M-20						
Amendment No. 1						
M-21	Steel					

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
			c, PD-201-a, PD-202, PD-220-a, PD-461, PD-474, PD-138, PD-139, PD-202-a, PD-462			
Amendment No. 1		Restricts production and delivery.		9- 9-41		
Extension No. 1				11-25-41		
Amendment No. 2		Further clarifies delivery restrictions.		12- 1-42		
Amendment No. 3 and Extension No. 2		Include iron products, regulates delivery and acceptance.	PD-138, PD-139	4-22-42		
Amendment No. 4		Extends delivery date after which report is not filed.		4-28-42		
Amendment No. 5		Further amends delivery restrictions.		5-24-42		
Interpretation No. 1		Salvage or used material not included.		9- 2-42		
M-21-a	Alloy Iron, Alloy Steel, Wrought Iron.	Restricts toll agreement deliveries, regulates delivery and alloy content.	PD-391, PD-391-a, PD-440	9-16-41	Iron and Steel	A. Oram Fulton J. F. Reid
Supersedes M-5, M-5-a, M-5-b						
Amendment No. 1		Regulates melting, processing, deliveries, alloy content.		11-25-41		
Extension No. 1				11-25-41		
Amendment No. 2		Regulates melting, delivery, alloy content, and toll agreements.		12-20-41		
Amendment No. 3		Regulates melting, deliveries, alloy content, and toll agreements.	PD-391, PD-391-a	5-11-42		
M-21-b	Steel Warehouses	Limits deliveries to quotas, with specified exceptions.	PD-83, PD-83-a, PD-83-b, PD-83-d, PD-83-e	9- 2-41	Iron and Steel	J. Ray'd Stuart E. F. Studwell A. F. Hitchiner C. D. Watson
Amendment No. 1		Extends date affecting deliveries	PD-346, PD-444	10-14-41		
Extension No. 1				11-25-41		
Amendment No. 2		Establishes quotas for specified products, limits deliveries, exempts certain sales.		1- 1-42		
Amendment No. 3		Changes quota, delivery, sale, and product regulations.	PD-83-g, PD-83-f	2-28-42		
Amendment No. 4		Regulates quotas, delivery, sale, rating, inventories, products.		5- 4-42		
Amendment No. 5		Amends quota restrictions.		5-25-42		
Amendment No. 6		Amends limitations on deliveries with relation to maintenance and repair, flat rolled steel products, cast-iron soil pipe, and miscellaneous small products; exempts oil well casing, pipe and tubing from general carload shipment restrictions.		7-23-42		
M-21-c	Steel Plates	Restricts deliveries and acceptance.	PD-169, PD-169-a, PD-298, PD-299	3- 7-42	Iron and Steel	M. W. Cole
Amended 7-27-42		Allocates entire supply		7-27-42		
M-21-d	Corrosion and Heat-Resistant Chrome Steel.	Restricts deliveries and acceptance, use, etc.	PD-221	12-27-41	Iron and Steel	A. Oram Fulton J. P. Larkin
Amendment No. 1		Further restricts delivery, use, etc.		3-27-42		
Interpretation No. 1		Classifies formed molding as fully fabricated article.		9- 9-42		
M-21-e	Tin Plate, Terne Plate and long ternes.	Restricts use, sale, and delivery	PD-299	2- 3-42	Iron and Steel	J. T. Nichols
Amended 5-16-42				5-16-42		
Amended		Further restricts use, production, consumption, sale, and delivery with stated exceptions. Grants exemptions to certain materials in inventory on 5-16-42; amends use restrictions and adds items to List A of permitted uses.		7-11-42		
M-21-f	Shot and Bullet Core Steel.	Allocates production	PD-201, PD-307, PD-308	2-17-42	Iron and Steel	A. Oram Fulton J. A. Chalk, Jr.
Amendment No. 1		Adds to Schedule A.		5-26-42		
Revocation		Revokes M-21-f.		9- 3-42		
M-21-g	Heat resistant chromium or chromium nick-	Limits the chromium and/or nickel content of heat-resistant chrommiu or chromium-		7- 2-42	Iron and Steel	A. Oram Fulton J. P. Larkin

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
M-23-a Revokes M-23 As amended 6-23-42	el alloy iron and alloy steel. Vanadium	nickel alloy iron or alloy steel for the uses set forth in Schedule A. Completely allocates supply	PD-209-a, PD-209-b PD-209-a, PD-209-b	12-20-41 6-23-42	Tungsten	C. S. Stimmel
M-24 Amendment No. 1	Iron and Steel Scrap.	Changes original order in that the melting of vanadium is prohibited except with specific authorization. Limits receiving deliveries without filing reports to 10 instead of 50 pounds. Directs the distribution	PD-149, PD-150, PD-151, PD-149-a, PD-150-a, PD-150-b, PD-151-a	10-11-41 5-23-42	Iron and Steel	Alex Miller
M-24-a Amendment No. 1	Iron and Steel Scrap.	Extends order until revoked; modifies transfer restrictions. Restricts sale of tinned and dented scrap. Adds certain areas of Kansas, Missouri, and Texas to Schedule A.		3-24-42 7- 1-42	Iron and Steel	Alex Miller
Revocation M-24-b	Iron and Steel Scrap.	Revokes M-24-a Provides for scrap segregation.		9- 9-42 4-22-42	Iron and Steel	Alex Miller
M-24-c	Iron and Steel Scrap.	Provides for segregation of specified types of alloy scrap and prohibits the mingling of such segregated scrap with with other unclassified scrap.		6-17-42	Iron and Steel	Alex Miller
M-27 Amendment No. 1	Phenols	Conserves supply and directs distribution. Regulates delivery, acceptance, and allocation.	PD-178, PD-178-a, PD-178-b, PD-180	8-30-41 11-10-41	Chemicals	L. A. Schleuter
Amendment No. 2 M-28	Chlorinated Hydrocarbon Refrigerants.	Extends order until revoked Directs residual supply	PD-160, PD-161, PD-162, PD-163, PD-164	7-28-42 8-22-41	Chemicals	R. Smith
Amendment No. 1 M-29 Revokes M-3, M-3-a Extension No. 1 to 6-30-42 As amended 6-30-42	Tungsten	Extends order until revoked Regulates inventory, delivery, acceptance, and allocation.	PD-9-c, PD-9-d	12-31-41 8-31-41 12-20-41	Tungsten	C. S. Stimmel
Amendment No. 1		Definition extended to include non-ferrous mixtures and alloys containing tungsten. Makes ores and concentrates subject to allocation.		6-30-42		
Amendment No. 1		Clarifies provisions for permissible deliveries; 60 day limitation period extended to 120 days.		8-18-42		
M-29-a Extension No. 1 M-29-b	Tungsten	Permits limited deliveries in specified forms.		10-31-41 12-20-41 2-14-42	Tungsten	C. S. Stimmel
M-32	Potassium Perchlorate.	Restricts and finally prohibits use in specified items.		8-28-41	Chemicals	J. W. Wizeman
M-33	Potassium Permanganate.	Conserves supply and directs distribution.		8-28-41	Chemicals	J. W. Wizeman
M-34 Amendment No. 1 supersedes M-34	Toluene	do		8-28-41 12-30-41	Chemicals	P. R. Eisenhuth
Amendment No. 2 M-38	Lead	Further restricts use, allocates supply, and extends order indefinitely. Amends production restrictions. Regulates shipments, deliveries, and reserve pool for allocation.	PD-223, PD-224 PD-66-a, PD-124, PD-197, PD-249, 234	5-22-42 10- 4-41	Tin and Lead	S. K. Butterworth
Extension No. 1 M-39	Cobalt	Regulates use, allocation, and delivery.	PD-152, PD-153	3-20-42 11- 4-41	Tungsten	C. S. Sears
Amended Supersedes M-39-a Amendment No. 1		Completely allocates supply, with specified exception. Order extended until revoked.		2- 7-42 6-30-42		

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
M-39-a Superseded by M-39 as amended.	Cobalt	Further amends receipt restrictions.	PD-152, PD-153	12- 5-41	Tungsten	C. S. Sears
M-39-b Amendment No. 1	Cobalt	Regulates use in specified items Amends restrictions to include Ground Coat Frit.		2- 7-42 6- 6-42	Tungsten	C. S. Sears
Amendment No. 2		Limits ground coat frit in any quarter to 35% of that used in first quarter of 1941.		8-21-42		
M-43	Tin	Completely allocates supply and applies general restrictions.	PD-213	12-17-41	Tin and Lead	R. F. Segur
Amendment No. 1		Further applies general restrictions.	PD-249	1-13-42		
Amendment No. 2		Restricts sales except by retail- ers.		4-10-42		
As amended 6-17-42		Completely allocates supply and prohibits delivery or acceptance without specific authorization.		6-17-42		
M-43-a	Tin	Limits and prohibits use in specified items.	PD-229	12-31-41	Tin and Lead	E. J. Janeway
Amendment No. 1		Limits use by manufacturing jewelers.		2-14-42		
Amended 3-17-42		Curtails use, sales, delivery, and limits use of scrap and findings.		3-17-42		
Amendment No. 1		Modifies restrictions for certain uses.		4- 4-42		
Amendment No. 2		Exempts certain uses from re- strictions.		4-10-42		
Amended 6-5-42		Further regulates and prohibits use; regulates sale and inven- tory.	PD-299, PD-300	6- 5-42		
Supersedes M-43-a amended 3-17-42		Extends permitted use of 38% tin wiping solder to 9-1-42, and permits water companies to use 38% tin wiping solder until 1-1-43.		8 -3-42		
M-44	Titanium Pig- ments.	Conserves supply and directs distribution.	PD-145, PD-146	12- 1-41	Chemicals	T. J. Starkie
Amendment No. 1		Changes effective date		1- 1-42		
Amendment No. 2		Amends delivery restrictions		1- 7-42		
Amendment No. 3		Defines "reserved quota per- centage."		2- 1-42		
M-45	Sheet steel for Steel Drums.	Reserves inventory for alloca- tion.	PD-155-a, PD- 156-a	11-17-41	Containers	Charles Dailey
Amendment No. 1		Removes limitations of size and use.	PD-154-a	12-31-41		
Amendment No. 2		Further clarifies "steel drum" and restrictions therefor.		5-25-42		
M-46	Chlorinated rub- ber.	Conserves supply and directs distribution.	PD-143, PD-144	11- 1-42	Chemicals	F. H. Carman
Amendment No. 1		Further restricts use	PD-33, PD-36, PD-7	2-23-42		
Amendment No. 2		Amends list of permissible uses and extends order until re- voked.		8- 1-42		
M-49	Iridium	Restricts use and sale in jewelry	PD-210, PD-211	12-12-41	Miscellaneous Minerals	L. C. Burman
M-50	Jewel bearings	Restricts sale, purchase, and use.	PD-235, Sched. I, PD-236, PD-338	1-14-42	Miscellaneous Minerals	Alan Magary
Amendment No. 1		Amends general restrictions		2-28-42		
M-61	Madagascar Flake Graphite.	Restricts use and delivery and applies to specified products.	PD-303, PD-303-a, PD-303-b.	2-17-42	Mica-Graphite	F. L. Wolf
Amended 7-7-42		Provides new method of appli- cation for securing crucibles and permits acquisition by job- bers without application.	PD-303-b, PD-575	7-7-42		
Interpretation No. 1		Redefines "Madagascar flake graphite."		3-23-42		
M-62	Sodium Nitrate	Conserves supply and directs distribution.	PD-237, PD-238	1-15-42	Chemicals	H. H. Meyers
M-63	Imports of Stra- tegic Materials.	Conserve supply and directs distribution.	PD-222-a, PD-222- b, PD-222-c, PD- 580	12-28-41	Stockpile and Shipping	E. Browning, Jr.
Amendment No. 1		Amends List A by substituting lead.		1- 9-42		
Amendment No. 2		Amends general restrictions and supplements List A.		1-13-42		
Amendment No. 3		Conserves supply and directs distribution.		3-14-42		
Supersedes M-63		Amends general restrictions and supplements List A.		4- 9-42		
Amendment No. 4		Supplements List A		5- 4-42		
Amendment No. 5		Adds to List A		5-22-42		
Amendment No. 6		do		6- 1-42		
Amendment No. 7						

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
Amendment No. 8 Amended 6-2-42		Adds Balsa wood to List A Restricts importation of materials on Lists I, II, III; also restricts use and disposition.	PD-222-a, PD-222-b, PD-222-c	6-10-42 7- 2-42		
Interpretation No. 1		Clarifies that no authorization is needed for release or withdrawal of certain materials from a free port or zone or the bonded custody of United States customs, but is necessary for subsequent disposition.		7-2-42		
Amendment No. 1		Changes point of control of imports entering United States under bond, changes Lists I, II, and III, and exempts from the restrictions materials owned by or purchased from United States Government agencies.		7-2-42		
Amendment No. 2 Amendment No. 3 Amendment No. 4 M-63-a	Imports of Strategic Materials.	Changes Lists I, II, and III Adds to List I, II, and III Clarifies responsibility of banks Amends M-63 as amended 6-2-42 excepting List III materials located in and to be shipped from Canada or Mexico.		7-21-42 8-21-42 8-25-42 7- 2-42	Stockpile and Shipping	E. Browning, Jr.
Amended 7-15-42		Exempts from order materials on List III located in, and to be shipped overland, by air, or by inland waterway from Canada or Mexico.		7-15-42		
Amended M-63-b	Imports of strategic materials.	Exempts materials on List III In List I wool (apparel, finer than 44's) with its various commodity numbers and in List II sheep-skins shearlings, are exempted from provisions of order.		9-11-42 7- 2-42 12:01a.m.	Stockpile and Shipping	Edward Browning, Jr.
Extension No. 1		Extends order to 12 midnight, 9-30-42.		8-15-42		
M-63-c	Imports	Bans mica imports from Brazil and India by private persons.		9-30-42		
M-63-d	Imports	Exempts samples, gifts and mail shipments of limited value.		9-30-42		
M-65	Cadmium	Conserves supply and directs distribution.	PD-441, PD-442	1-17-42	Zinc	H. J. Wolf
As amended 6-17-42	Cadmium	Prohibits delivery except to distributors or pursuant to specific authorization and prohibits acceptance unless in accordance with Priorities Regulation No. 1.		6-24-42		
M-65-a	Cadmium	Regulates use, sales, deliveries, and inventories.		1-17-42	Zinc	H. J. Wolf
M-67 Superseded by L-63 Revocation	Suppliers' Order	Limits inventories of plumbing, heating and electrical supplies.		1- 3-42	Distributors	L. C. White
M-68	Oil Industry Production Material.	Conserves material with specific use exceptions.	PD-214-a, PD-214-b, PD-214-c.	4- 6-42 12-23-41	Petroleum Coordinator.	R. E. Allen
Amendment No. 1 Amendment No. 2		do Modifies restrictions regarding specific operations.		1-14-42 1-28-42		
Interpretation No. 1 Amendment No. 3		Clarifies applicability of order Determines uniform well-spacing pattern.		2- 7-42 2-18-42		
Interpretation No. 2 Amendment No. 4		Defines "lease equipment" Supersedes Interpretation No. 1 and amends restrictions.		12-23-41 5-21-42		
Amendment No. 5	Oil Industry Production Materials.	Supersedes Interpretation No. 1, and limits order to United States, possessions, and territories.		6-25-42		
M-68-c	Oil Industry, Marketing Material.	Conserves materials with specific use items.	PD-215	1-14-42		
Interpretation No. 1 Amended		Clarifies applicability of order Conserves materials with specific use exceptions.		2- 7-42 3-23-42		
Amendment No. 1		Supersedes Interpretation No. 1 and amends restrictions.		5-21-42		
M-68-1	Oil Industry, Production Materials.	Exempts wells in specified areas		2-13-42		

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
M-68-2	Petroleum material conservation.	Exempts from restrictions of order, wells drilled in the State of Missouri and portions of the States of Kansas and Oklahoma subject to specific provisions.		6-20-42	Petroleum Coordinator	R. E. Allen
M-72	Lead and Tin Scrap.	Conserves supply and directs distribution.		1- 8-42	Tin and Lead	I. Davis
Amended		Further restricts delivery and use.	PD-249, PD-254, PD-254-A	5-18-42		
M-72-a	Tinned and de-tinned scrap.	Restricts deliveries and uses; covers used tin cans, etc.		9- 2-42		
M-76	Land Turbines	Establishes orderly production schedule.		3- 9-42	Power	L. L. Bosch
M-78	Mercury	To curtail use in certain items		1-23-42	Miscellaneous Minerals	F. C. Johnson
Amended		Prohibits and restricts use in Lists A and B respectively and limits use in other items, all subject to specific exceptions.		8- 5-42		
M-81	Tinplate and Terneplate.	Restricts manufacture, sale, delivery and use in tin cans.	PD-269	2-11-42	Containers	H. F. Krimendahl.
Interpretation No. 1		Clarifies limits specified		3-13-42		
Amendment No. 1		Provisions for packing soup		4- 6-42		
Amendment No. 2		Further provides for manufacture and use of tin cans.		4-30-42		
Amendment No. 3		Reduces civilian pack of apricots for 1942 from 75% to 65% of 1940 pack.		6-22-42		
M-81	Cans made of tinplate or terneplate.	Further prohibitions on the use of tin- or terneplate cans for many additional "special products." Minor changes relating to food packing.		6-27-42		
As amended 6-27-42		Permits use of those on hand or in process on 7-1-42 for certain products formerly omitted.		7- 9-42		
Amendment No. 1		Amends tables I and II.		8- 6-42		
Amendment No. 2		Packing of ripe olives		9-14-42		
Amendment No. 3		Further restrictions on the use of tin and terneplate in the manufacture of cans, to pack designated products.		6-13-42	Containers	H. F. Krimendahl
M-81-a	Tinplate and Terneplate.	Amends use, sale, and manufacturing restrictions relating to lubricating oil cans made of terneplate.		7-23-42	Containers	H. F. Krimendahl
M-81-b	Cans made of tinplate or terneplate.	Revokes M-81-b		9- 2-42		
Revocation		Establishes complete allocation control.	PD-293, PD-294	2- 7-42	Miscellaneous Minerals.	R. D. Parks
M-89	Corundum	Controls uses; covers ores and flour.		9-16-42		
Amendment		Permits accumulation of excess inventories.		2-13-42	Iron and Steel	Charles Ewing
M-97	Coal and Coke	Truck rationing order	PD-310, PD-321, PD-322	3- 9-42	Automotive	J. E. Graham
M-100	Light, Medium, Heavy Trucks-Tractors and Trailers.	Redefines "sales agency" and includes "mine products" in Schedule A.		5-28-42	Automotive	
Amendment No. 1	Rationing of new Commercial Vehicles.	Changes definition of "new commercial motor vehicle."		7-24-42		
Amendment No. 2		Provides for country-wide inventory of "new commercial motor vehicles" at close of business 7-31-42.	PD-570, PD-571, PD-572-A, PD-	7-24-42	Automotive	J. E. Graham
M-100-a	Rationing of new commercial motor vehicles.	Curtails the processing and use	PD-325, PD-480	3- 6-42	Mica-Graphite	R. B. Ladoo
M-101	Mica, block	Controls supply and directs use		6- 1-42		
Amended 5-23-42		To conserve supply of tin by directing the use in manufacture of closures.	PD-519	4- 3-42	Containers	P. Hardy
M-104	Metal Closures for Glass Containers.	Further restrictions on use in manufacture of shells for crown cups.		4-23-42		
Amendment No. 1		Revokes Amendment No. 1		4-25-42		
Amendment No. 2		Revokes M-104-Amendment No. 1.				
Amended 5-30-42	Closures for Glass Containers.	The designation "Tinplate and Terneplate Closures for Glass Containers" amended to read "Closures for Glass Containers"; restricts manufacture, sale, delivery, purchase, use.		5-30-42		
Amendment No. 1				9-26-42		

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Number	Subject	Subject	Related Forms	Effective	Branch	Administrator
M-115	Collapsible Tin, Tin-Coated and Alloy Tubes.	Conservation order restricting the use of tin in manufacture of such tubes. Provides for disposition of tubes.		4- 1-42	Containers	Curtis Barnes
Amendment No. 1				5-11-42		
Amendment No. 2		Extends order to 1-1-43, exempts certain distributors in the armed forces, liberalizes quota number provisions for class III products.		6-15-42		
M-116	Closure Enamel	Conservation order limiting the use of enamel for glass container tops.		4- 4-42	Chemicals	D. M. Gray
Amendment No. 1		Changes effective date of order to 4-30-42.		4-20-42		
M-119	Rubber Sealed Closures for Glass Containers.	Conservation order restricting the use of rubber for closure purpose.		4- 9-42	Containers	P. Hardy
Amendment No. 1		Modifies general use restrictions; adds to Table I.		8- 5-42		
M-120—Cancelled M-121—Not Issued M-126	Iron and Steel Conservation.	General conservation order restricting the use in certain products.	PD-500	5- 5-42	Iron and Steel	H. T. Bourne
Interpretation No. 1 Amendment No. 1		Defines "beds, except hospitals" Amends list "A" on Stamps and tablets.		6-9-42		
Amendment No. 2	Iron and Steel Conservation.	Permits coffee roasting machinery maintenance and repair and removes manicure implements from List A. Amends types of metal tags affected.		6-26-42		
Amended 7-13-42		Adds items to List A of prohibited items subject to limitation periods; grants 60-day exemption to Army, Navy, and Maritime Commission orders.	PD-500	7-13-42		
Amendment No. 1		Amends restrictions with respect to List A to cover "processing or putting into process" any iron and steel.		7-13-42		
Amendment No. 2		Governing date of every item heretofore put on List A is 7-15-42.		7-14-42		
Amendment No. 3		Adds ornamental fences and automatic pencils to list A.		7-29-42		
Amendment No. 4		Amends definition of "Army-Navy-Maritime Order" and amends list C of permitted uses.		8- 3-42		
Amendment No. 5		Adds to and amends Lists A and C.		9- 3-42		
Amendment No. 7		Clarifies definition of pencils.		10- 1-42		
M-128	Zinc sulphide Pigments.	Establishes a monthly producer's pool.	P D-464	5- 6-42	Chemicals	T. J. Starkie
M-130	Passenger Automobiles.	Regulates manner of sale to specified Government Agencies.	PD-501, PD-502	6-12-42	Automotive	C. S. Doerr
M-131	Quinine	Conservation order restricting sale, purchase, and use.	PD-401	4- 4-42	Health Supplies	T. F. Currens
Amended 4-30-42	Quinine, Totquinine, and Cinchona Bark.	Further restrictions on purchase, sale, and use.		4-30-42		
Amendment No. 1	Quinine and other drug extracts from cinchona bark.	Deletes from the order, the exception to the restrictions concerning less than 50 ounces of Quinine and/or Totquinine on hand as of 4-4-42 and 4-30-42.		6-19-42		
M-136	Blackplate cans	Restricts purchase, acceptance of delivery, use and regulates manufacture. subject to specified exceptions.		7-22-42	Containers	H. F. Krimendahl
M-137	Benzene	Restricts use and delivery		4-20-42	Chemicals	P. R. Eisenhuth
Amended 6-1-42		Complete allocation control	PD-223-a, PD-224-a	6- 1-42		
M-153	Acrylonitrile	Places under complete allocation		5-14-42	Chemicals	F. H. Carman
M-154	Thermoplastics	Sets forth provisions for accepting and filling orders for class I, II, III and IV users as so listed. Prohibits use after 9-1-42 for class IV uses.		6-27-42	Chemicals	Dr. R. H. Ball
Amendment No. 1		Scheduling of production date changed to 8-15-42; date after which orders must be certified established as 8-15-42.		7-22-42		

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Number	Subject	Purpose	Related Forms	Effective	Branch	Administrator
Amendment No. 2		Postpones certification procedure to 9-1-42, and production scheduling to 10-1-42.		8-14-42		
M-154-a	Thermoplastics	Restricts the use, processing, or delivery of polyvinyl butyral, subject to specified exceptions.		8-14-42		
M-154-b	Thermoplastics	Restricts the use, processing, sale or delivery of methyl methacrylate sheet scrap except for reprocessing into sheets.		8-14-42		
M-156	Tantalum	Allocates entire supply	PD-487, PD-488, PD-489	5-22-42	Manganese-Chrome Chemicals	R. G. Pedrick
M-158	Drum Exterior Coating.	Restricts use except in conformity with certain formulation and color requirements, restricts acceptance and delivery.		5-30-42		Daniel Gray
Amendment No. 1	Drum Exterior Coating.	Permits use of any "Class A" coatings, as defined, which were manufactured on or before 6-5-42 without limitation.		6-27-42		
M-160	Beryllium	Complete allocation control after 7-1-42.	PD-496, PD-497	6- 1-42	Tungsten	H. P. Henderson
M-161	Inventory Restriction Exceptions.	Specifies materials not affected by inventory restriction.		6- 1-42	Miscellaneous Minerals.	T. S. Rogers
Amendment No. 1		Paper, paperboard, paper products and waste paper added to the list of exceptions.		6-26-42		
Amendment No. 2		Adds "Ilmenite" to the list of Schedule A exceptions.		6-26-42		
Amendment No. 3		Adds Salt (Sodium chloride) in bulk to Schedule A.		7-23-42		
Amendment No. 4		Adds sodium carbonate and sodium hydroxide to Schedule A.		8- 3-42		
Amendment No. 5		Adds borax and boric acid to Schedule A.		8- 8-42		
Amendment No. 6		Adds silicate of soda to Schedule A.		8-26-42		
M-162	Platinum	Restricts sale, purchase, and delivery.	PD-512, PD-514	5-30-42	Miscellaneous Minerals	L. C. Burman
M-163	Byproduct Ammonia and Sulphate of Ammonia.	Complete allocation control	PD-237, PD-503, PD-504	5-30-42	Chemicals	H. H. Meyers
M-164	Synthetic Ammonia.	do	PD-237, PD-504	5-30-42	Chemicals	H. H. Meyers
M-165	Cyanamid	do	PD-237, PD-503, PD-504	5-30-42	Chemicals	H. H. Meyers
M-175	Ethyl Cellulose	Brings supply under complete allocation control and provides deliveries shall be made only as specifically authorized.	PD-549, PD-550	6-18-42	Chemicals	J. B. Weisel
M-178	Butadiene	Places Butadiene under complete allocation and forbids use and delivery except as specifically authorized.	PD-33	7- 1-42	Chemicals	G. L. Roberts
M-181	Diamond Dies	Freezes entire supply and provides for allocation for such dies. Prohibits sale or delivery except to RFC.	PD-559, PD-560	7- 1-42	Miscellaneous Minerals	Athos D. Leveridge
M-183	Phosphate plasticizers.	Restricts the use and delivery unless specifically authorized.	PD-557, PD-558	7- 2-42	Chemicals	R. C. Ruark
M-184	Aniline	Establishes allocation control	PD-583, PD-584	7-13-42	Chemicals	H. M. Harker
M-185	Pyridine	Establishes allocation control	PD-604, PD-605	9- 1-42	Chemicals	Edward Casey
M-199	Silver	Restricts sale, delivery, purchase, receipt, and manufacture of foreign silver to specific uses.		7-29-42	Miscellaneous Minerals	W. S. Murphy
Interpretation No. 1.		Clarifies meaning of "put into process".		9- 1-42		
Amendment No. 2		Completion of semi-fab. products allowed to Nov. 15.		9-28-42		
M-200	Fluid Milk Shipping Containers	Restricts production to 35 per cent of metal used from 7-1-41 to 6-30-42.		10- 1-42		
M-216	Conservation of Autos.	Establishes standards of maintenance.	PD-641	8-29-42		
M-225	Overhead Traveling Cranes.	Provides for scheduling of production and delivery.		9- 7-42		
M-227	Copper chemicals	Provides complete allocation control.		9- 9-42		
M-230	Phosphorus	Provides complete allocation control.		9- 9-42		
M-233	Gas Cylinders	Controls production, distribution		9-30-42		

How to Operate Under the Production

• • • PRP apparently will be retained for first quarter, 1943, use. This does not mean that operation of the plan will be retained on its current basis, necessarily. Controls probably will be worked into the operation of the plan in connection with major war contracts, and some application of a metals quota plan is considered likely.

In assigning quotas of metals to the industry branches, a "kitty" likely will be retained as a pool for firms operating under Preference Rating Orders and not under PRP. However, residual amounts are expected to be shiftable from one firm to another in the course of quarterly operations to care for interim applications (PD-25 F), and thus no "kitty" is being established for such applications.

Making Purchases Under the Plan—Manufacturers should file Form PD-25A within the time stated by WPB showing inventory, product manufacture, rate of material consumption, estimated requirements, previous quarter shipments and unfilled orders, together with the kinds of material consumed. After PD-25A has been returned to the manufacturer with the ratings and materials allowed certified, the first thing the manufacturer should do is to set up records to control the material he is authorized to purchase. The records should show purchases against the quantities allowed and the material balance. WPB does not care what type of records are kept or whether a producer keeps a perpetual inventory.

The following are illustrations of the ways ratings can be used:

A typical rating pattern is 25 per cent AA-1, 25 per cent A-1-a and 50 per cent A-1-j. The producer need not place purchase orders for the entire material bill at once. Orders bearing the ratings may be placed as often as needed and in any amount so long as they do not call for more material than has been approved by WPB. It is also possible to place a single purchase order showing all of the ratings. For example, if a manufacturer has been authorized to purchase 1000 units, he may place an order for 250 units at AA-1, 250 at A-1-a and 500 units at A-1-j. On the other hand, WPB says that he may not on that purchase order in percentages saying, "I want 500 motors, one-quarter at AA-1 and three-quarters at A-1-j."

Another way of purchasing and one that WPB favors is for a manufacturer to buy at a rating the total number of units certified at that rating, plus the material approved by WPB at any or all ratings above it. For illustration, where the total unit authorization is 1000 motors, an order can be placed for 500 motors at A-1-j, not using the A-1-a, or it is possible to order the whole 1000 at A-2. The advantage of this method is that it permits the manufacturer to use the higher ratings to expedite delivery where necessary to place a higher rating to get delivery on a portion of the order.

Other Outstanding Purchase Orders—When a PRP certificate is received, the ratings assigned in the authorization block may be used in purchasing and in rerating outstanding purchase orders. However, a manufacturer may not use any preference ratings other than those assigned on the PRP certificate (including all certificates in the PD-25 series) except

for plant expansion, construction or capital equipment, reratings in the super rating bracket, and ratings specially granted by WPB.

In the event outstanding purchase orders, whether previously rated or not, cover quantities in excess of those authorized on the current PRP certificate plus the balance not yet received on any previous certificate then the PRP user must cancel or reduce its outstanding purchase orders calling for delivery within the quarter so that no more material will be delivered than has been authorized on the current or previous certificates.

This is exemplified by the case of a PRP user who has secured approval for the purchase of 1000 units, and has extended a rating or PD-3A or PD-1A certificates for 400 units and has scheduled these units for delivery during a succeeding quarter. WPB requires that the 400 units be deducted from the total of 1000 and no more than 600 additional units may be purchased during the current quarter.

Previously under PRP processing, if amounts requested by a PD-25A application in a prior quarter were undelivered, the PRP user was permitted to accept deliveries of the unshipped tonnage plus whatever might be authorized in the current quarter. Under an amendment to be issued soon this practice will be discontinued. Materials not delivered in the quarter when authorized may not later be secured by the manufacturer. WPB points out that the present practice fosters an unbalance of material supplies by reason of a permissible overlapping.

It is presumed that the manufacturer would continue at the same rate of production and the overage in one quarter would only constitute excess inventories.

Interim Applications—When the original PRP does not authorize sufficient material to meet a manufacturer's expanding requirements, he may file the interim application Form PD-25F. If it happens that his rating pattern has changed meanwhile from 10 per cent A-1-a to 30 per cent A-1-a, etc., he is entitled to reassign the higher ratings he receives on the interim certificate.

A producer may accomplish this in one of the following ways:

Notify his suppliers in writing that the previously assigned ratings have been canceled and furnish them with duplicate orders carrying the endorsement of the ratings assigned.

Advise suppliers of the change in rating by mail, listing the purchase orders on which the ratings are to be changed, giving the numbers, the original rating and the new with instruction to file the letter with the original order.

Allow its outstanding orders for the entire authorized quantity of any single items to stand at the ratings previously assigned unless the new ratings are lower or for reduced amounts. Reassignment of ratings must be applied to all and not part of any authorized quantity.

Cancel or reduce its outstanding orders if ratings assigned by the interim certificate are lower or are for smaller amounts of material.

Requirements Plan (PRP); Use of PD-25A

Rerating Orders Under PRP—The most important changes contained in Regulation No. 12 are as follows:

WPB has granted permission to assign reratings to purchase orders to get operating supplies up to 10 per cent of the value of materials processed to fill a rerated order, to all companies whose orders are rerated. PRP users were formerly forbidden to extend reratings to obtain operating supplies.

The super ratings may be applied to outstanding purchase orders for material to fill the rerated order by telegram, letter or by issuance of new purchase orders with the higher ratings, as well as by use of PD-4Y.

Rerating directions in the PD-4S series may be used by military officials not only to rerate orders which have been placed with prime contractors but also on subcontractors' orders.

The provisions regarding the effect of a rerating on a production schedule has been modified to eliminate the distinction between a "fixed production schedule" and a "production schedule." The regulation now provides that no company is required to interrupt its schedule for 40 days if such an interruption caused by rerating would mean substantial production loss.

An entirely new procedure is provided for application of rerating by PRP users. The chief feature of this procedure is that a PRP user may not oftener than twice a month revise the rating pattern of its outstanding purchase orders in accordance with rerating it has received.

This means that if a PRP user which is filling a certain volume of A-1-a has 50 per cent of these orders raised to AA-2 it may without further authorization raise to AA-1 the ratings on 50 per cent of the purchase orders it has placed for materialism.

Recalculating the Pattern—In revising its whole rating pattern on outstanding purchase orders as provided by the amended regulation, a PRP user will adjust the percentage of AA-1 and A-1-a's to conform to the percentage pattern of ratings (on the

basis of dollar volume) of the orders which it has scheduled for production.

To take a simplified example, suppose that a PRP user had 33 1/3 per cent of his production by dollar value \$1,000 A-1-a. If half of the A-1-a orders are rerated AA-1, the rating pattern will change to 16 2/3 per cent A-1-a for the remainder. The company may recalculate its rating pattern in this way twice a month, using percentages of dollar volume and apply corresponding reratings to its outstanding purchase orders for the needed materials. However, no single purchase order may be rerated more than once in any 31-day period. In making this calculation, another provision of the amended regulation permits the PRP users to group all ratings from A-1-b through A-1-k and apply it to the whole group previously authorized on its PRP certificate. It may do the same with all orders rerated A-2 to A-10 inclusive. PRP users which rerate their outstanding purchase orders are forbidden to change the rating pattern so that the percentage of high ratings would exceed corresponding ratings on the orders they have scheduled for production.

Each PRP user is instructed so far as practicable to place his purchase orders for the material rated or authorized on his certificates so as to call for substantially equal deliveries during each of the three months of the quarter. The user should not, unless absolutely necessary to maintain his delivery schedule or to obtain the minimum quantities procurable, order for delivery during the first month of the quarter more than 40 per cent, or during the first two months more than 70 per cent of the total quantity of any material.

An interim procedure has been provided for manufacturers who do not receive their certified PD-25A applications. Such a manufacturer in conformity with the foregoing percentages may order 40 per cent of the amount for which he made application and if he has not received his material authorization may accept delivery of this amount. On Nov. 1, 1942, if he has not yet gotten his PD-25A back, he may accept delivery of an additional 30 per cent.

Elements of Steel Quota Plan Described

Steel Quota Plan—The Steel Quota Plan is a companion to the Quota Assignment System which directs production of the mills. The new plan will direct distribution of iron and steel on a quarterly basis, dividing production up according to the requirements of the Army, Navy, Lend-Lease, Board of Economic Warfare, Maritime Commission and civilian supply.

Each bureau participating in the plan will distribute what are to be known as "steel certificates" upon application, and will notify WPB daily of the amounts of metal authorized to be purchased. WPB will keep a tight rein on allotments so that they are not exceeded and so that demand and supply are equalized.

Purchasers, according to the plan, are divided into two

classes. Class I purchasers are those who can identify their needs with a specific contract or authorization for military or essential goods. Class II purchasers are those who cannot so identify their needs. The agencies have jurisdiction over the approval of applications of Class I purchasers or purchases and WPB will be able to grant metal to Class II purchasers with the approval of the war agencies.

Steel certificates will show the month in which shipment is required. Production urgency is denoted by the certificate. If marked "C" first priority, "D" second priority, or "X" last priority.

"C" certificates are to represent 85 per cent of production, "D" certificates, 15 per cent of production, and "X" certificates up to 10 per cent overage.

Description of P Orders

(For description of related PD forms, turn to page 132. Obsolete forms are starred [*] in checklist beginning on page 132.)

Order No.	Subject	Rating	Purpose	Related Forms	Effective	Expires	Branch	Administrator
P-1 Superseded by P-5 P-2 through P-2-s Superseded by P-11	Electric traveling cranes		Assigns preference rating to materials		3-13-41	6-30-41	Tools	L. R. Hawkins
P-2 Superseded by P-11	Machine tools and parts		do		3-28-41	6-30-41	Tools	L. R. Hawkins
P-3 Superseded by P-109	Airframes (not including engines or propellers)		do		4-29-40	9-30-41	Aircraft	A. G. Nye, Jr.
P-4 Superseded by P-109	Airplane engines and propellers	A-1-c	Assigns preference rating to materials		4-29-41	9-30-41	Aircraft	A. G. Nye, Jr.
P-5 Superseded by P-5-a Amendment No. 1	Cranes and hoisting equipment	A-1-a	Assigns preference rating to materials		5-26-41	7-31-41	Tools	L. R. Hawkins
P-5-a Superseded P-5		A-1-a	Assigns preference rating to materials		6-16-41	7-31-41	Tools	L. R. Hawkins
P-5-b Supersedes P-5-a Extension No. 1		As assigned	Assigns preference rating to materials		8- 1-41	10-31-41	Tools	L. R. Hawkins
P-5-c Extension No. 2 of certain serial-numbered copies					11- 1-41	2- 1-42	Tools	L. R. Hawkins
P-6 Superseded by P-90	Defense supplies rating plan	A-10			1-21-42	5- 1-42		
P-6-a Amendment No. 1, Extension No. 1	Civil aircraft repair parts and accessories	A-10	Assigns preference rating to materials	PD-25-a	As assigned	Quarterly periods 12-31-40	Production Requirements	A. L. Williams
P-7 Amendment	Merchant ship construction	A-10	Assigns preference rating to deliveries.	PD-25-c-1, PD-25-c-2	7-31-41	3-31-42		
Amendment		Varies	Assigns preference rating to deliveries.		10-27-41	Upon completion Upon completion	Maritime Commission	C. R. Ellicott, Jr.
Interpretation No. 1	Merchant ship construction	A-1	Raises assigned rating for material		6-12-41			
P-8 Amendment No. 1, Extension No. 1	Freight car construction: Railroad, industrial and mine.	A-1-a, A-1-b, A-1-c, A-3	Assigns preference rating to materials		As assigned			
Amendment No. 2			do		6-18-41	11-30-41	Transportation	Andrew Stevenson
Interpretation No. 1			Directs filing of reports		11-29-41	12-31-41		
P-9-a through P-9-g Superseded by P-109	Airframes: Heavy bombers	A-1-b	Assigns preference rating to material		12-31-41	3-31-42		
P-10 Superseded by P-109	Conversion of ships	AA	Assigns preference rating to material for conversion.		3-16-42	4-30-42	Aircraft	A. G. Nye, Jr.
P-11 Supersedes P-2	Metal-working equipment	A-1-a, A-1-b, A-1-c	Assigns preference rating to material		6-26-41	12-31-41	Maritime Commission	C. R. Ellicott, Jr.
P-11-a Supersedes P-11	Metal-working equipment	As assigned	Assigns preference rating to material	PD-115	6-19-41	Completion of specified ships	Tools	L. R. Hawkins
Extension No. 1			Assigns preference rating to material		7- 1-41	9-30-41	Tools	L. R. Hawkins
Extension No. 2			Assigns preference rating to material		9-30-41	1-15-42		
P-12 Superseded by M-1-d	Aluminum scrap	A-10	Assigns preference rating to deliveries to melters and processors.		12-31-41	3-15-42	Aluminum and magnesium	G. W. Reed
P-13 Superseded by P-109	Airframes: Models S-3-C.	A-1-b	Assigns preference rating to material for production.		3- 9-42	6-30-42	Aircraft	A. G. Nye, Jr.
					6-26-41	12-31-41		
					7- 3-41	12-31-41		

Extension No. 1 P-14-a	Shipway construction.	A-1-a	Assigns preference rating to material for construction.	12-31-42 7-12-41	1-31-42 Upon completion	Maritime mission	C. R. Ellicott, Jr.
P-14-b	Shipway construction	A-1-b	Assigns preference rating to material for construction.	7-12-41	Upon completion	Maritime mission	C. R. Ellicott, Jr.
Amendment No. 1		A-1-a	Raises rating to A-1-a	As assigned	Upon completion		
P-15	Electrical relays and solenoid assemblies.	A-1-d	Assigns preference rating to material for production.	7-11-41	12-31-41	Aircraft	A. G. Nye, Jr.
P-16	Radio receiving, transmitting and directional equipment.	A-1-c	Assigns preference rating to material for production.	7-11-41	12-31-41	Aircraft	A. G. Nye, Jr.
Extension No. 1 Revocation				12-31-41	1-31-42		
P-17	Canning machinery and equipment.	A-2	Assigns preference rating to material for construction or repair.	1-31-42 7-9-41	8-31-41	Food	E. A. Meyer
P-18	Cutting tools.	A-1-a	Assigns preference rating to material for production of specified tools.	7-31-41	10-31-41	Tools	L. R. Hawkins
P-18-a	Cutting tools	A-1-a	do Further specifies tools affected	8-28-41 11-29-41	11-30-41 2-28-42	Tools	L. R. Hawkins
Amendment No. 1, Extension No. 1 Extension No. 2							
P-19	Defense projects outside U. S.	As assigned	Assigns preference rating to material for construction.	2-28-42	7-1-42	Review and approval	D. N. Uthus
Superseded by P-10-h Amendment No. 1			Permits application of rating to materials which will be expended in construction. do	PD-200, PD-200-a As assigned	As assigned		
P-19-a	Construction defense project within the U. S.	As assigned	Material entering into construction: All assigned serial numbers amended to limit the application of rating to materials to be physically incorporated into project.	7-16-42		Review and approval	D. N. Uthus
Amendment No. 1			Permits application of rating to materials which will be expended in construction.	7-18-41			
Amendment No. 2			Assigns preference rating to material for construction. do	7-7-42			
P-19-b	Defense projects with protected delivery dates.	A-1-b	Restricts use of rating by producer and supplier unless necessary material cannot be secured without it.	7-30-41	12-31-41	Review and approval Construction Bureau	D. N. Uthus
P-19-c	Defense housing projects publicly financed.	As assigned	Assigns preference rating only to material on Defense Housing critical list.	As issued	When revoked		S. W. Jones New York Office
Amendment No. 1		Variable	Restricts use of rating by producer and supplier unless necessary material cannot be secured without it.	4-20-42	3-31-42	Construction Bureau	S. W. Jones New York Office
P-19-d	Defense housing publicly financed.	As assigned	Assigns preference rating to material for construction.	9-9-41			
Amendment No. 1		Variable	Assigns preference rating to materials on Defense Housing critical list.	4-20-42			
P-19-e	Road projects	As assigned	Assigns preference rating to material for construction.	10-18-41	Upon completion	Public Roads Administration	L. S. Tuttle
P-19-g	Defense housing by builders under FHA.	Varies	Assigns preference rating to material for construction.	12-31-41	7-31-42	Construction Bureau	A. Achinstein
P-19-h	Construction of rated projects.		Assigns preference rating to material for construction.	PD-200, PD-200-a As assigned	Upon completion	Review and approval	D. N. Uthus
Supersedes P-19 and P-19-a Amendment No. 1			Permits application of rating to materials which will be expended in construction. do	7-7-42			
P-19-i	Aluminum and magnesium plants	A-1-a, A-1-b	Interprets "Protection of Delivery Date".	5-6-42		Aluminum and Magnesium	P. I. Carnes
Interpretation No. 1							

THE IRON AGE PRIORITIES GUIDE

Order No.	Subject	Rating	Purpose	Related Forms	Effective	Expires	Branch	Administrator
Supplement No. 1 P-20	Material for construction of rated projects. Specified locomotives	A-1-b A-3 A-3	To allow application of project rating to obtain expendable material. Assigns preference rating to material for construction. Requires records and reports of extensions by producer and rated sub-contractor to be sent to Automotive, Transportation, and Farm Equipment Branch, Division of Civilian Supply, OPM, instead of Division of Priorities.		7- 7-42 7-21-41 11-29-41	11-30-41 12-31-41	Aluminum and Magnesium Transportation Equipment	P. I. Carnes A. Stevenson
Amendment No. 1, Extension No. 1								
Extension No. 2 Interpretation No. 1 Extension No. 3 P-21	Locomotives: Steam, electric, Diesel for railroad, mine, industrial use.	A-3 A-3	Assigns preference rating to material for repair and rebuilding. Requires repairers and suppliers to file reports as required with Automotive, Transportation, and Farm Equipment Branch, Division of Civilian Supply, OPM, instead of Division of Priorities.		12-31-41 3-16-42 7-21-41 11-29-41	3-31-42 4-30-42 11-30-41 12-31-41	Transportation Equipment	A. Stevenson
Amendment No. 1, Extension No. 1								
Extension No. 2 Interpretation No. 1								
Extension No. 3 P-22	Maintenance and repair within limits of U. S. A., territories and possessions.	A-10	Prohibits acquisition of material for plant maintenance, extension, addition or equipment.		12-31-41	3-31-42		
Superseded by P-100								
P-23	Mining machinery and equipment.	A-3	Assigns preference rating to material		3-16-42 9- 9-41	4-30-42 2-28-42	Maintenance and Repair	D. C. Gallagher
Superseded by P-56-a Extension No. 1								
P-24	Experimental and research work- Aircraft.	A-1-b	Assigns preference rating to material		7-29-41 11-29-41 8- 5-41	11-30-41 12-31-41 12-31-41	Mining Aircraft	Dr. M. H. Stow A. G. Nye, Jr.
Extension No. 1 Extension No. 2 P-25 (Not issued) P-25-a					12-22-41 2-25-42	2-28-42 3-31-42		
Amendment No. 1 Amendment No. 2, Extension No. 1	Light tanks: Parts, accessories and equipment.	A-1-f A-1-a	Assigns preference rating to material for production. Raises rating Directs disposition of orders placed prior to revocation.		8-11-41	3-31-42	Tanks and Combat Vehicles	A. B. Hood
P-25-b	Light tanks: Spare assemblies and parts.	A-1-f	Assigns preference rating to material for production. Raises rating Directs disposition of orders placed prior to revocation.		3-14-42	5-31-42		
Amendment No. 1 Amendment No. 2, Extension No. 1	Light tanks: 30 caliber 37 mm. guns, gun mounts.	A-1-a A-1-a A-1-f	Assigns preference rating to material for production. Raises rating Directs disposition of orders placed prior to revocation.		8-11-41	3-13-42	Tanks and Combat Vehicles	A. B. Hood
Amendment No. 1 Amendment No. 2, Extension No. 1	Light tanks: Gasoline and Diesel engines and accessories.	A-1-a A-1-a A-1-f	Assigns preference rating to material for production. Raises rating Directs disposition of orders placed prior to revocation.		12-12-41 3-14-42 8-11-41	5-31-42 3-31-42	Tanks and Combat Vehicles	A. B. Hood

Amendment No. 1 Amendment No. 2. Extension No. 1 P-25-e	A-1-a A-1-a A-1-f	Light tanks: Armament, engines, parts, accessories, equipment.	Raises rating Directs disposition of orders placed prior to revocation. Assigns preference rating to materials for production.	12-12-41 3-14-42 10-14-41	5-31-42 5-31-42	Tanks and Combat Vehicles A. B. Hood
Amendment No. 1 Amendment No. 2. Extension No. 1 P-26 (Not issued) P-26-a	A-1-a A-1-a A-1-d A-1-a	Medium tanks: Parts, accessories and equipment.	Raises rating Directs disposition of orders placed prior to revocation. Assigns preference rating to material for production.	12-12-41 3-14-42 8-11-41	5-31-42 3-31-42	Tanks and Combat Vehicles A. B. Hood
Amendment No. 1 Amendment No. 2. Extension No. 1 P-26-b	A-1-a A-1-a A-1-d A-1-a	Medium tanks: Spare parts and assemblies.	Raises rating Directs disposition of orders placed prior to revocation. Assigns preference rating to material for production.	12-12-41 3-14-42 8-11-41	5-31-42 3-31-42	Tanks and Combat Vehicles A. B. Hood
Amendment No. 1 Amendment No. 2. Extension No. 1 P-26-c	A-1-a A-1-a A-1-d A-1-a	Medium tanks: 37 mm. and 75 mm. guns and mounts.	Raises rating Directs disposition of orders placed prior to revocation. Assigns preference rating to material for production.	12-12-41 3-14-42 8-11-41	5-31-42 3-31-42	Tanks and Combat Vehicles A. B. Hood
Amendment No. 1 Amendment No. 2. Extension No. 1 P-26-d	A-1-a A-1-a A-1-d A-1-a	Medium tanks: Gasoline and Diesel engines.	Raises rating Directs disposition of orders placed prior to revocation. Assigns preference rating to material for production.	12-12-41 3-14-42 8-11-41	5-31-42 3-31-42	Tanks and Combat Vehicles A. B. Hood
Amendment No. 1 Amendment No. 2. Extension No. 1 P-26-e	A-1-a A-1-a A-1-d A-1-a	Medium tanks: Armament, engines, parts, accessories, equipment.	Raises rating Directs disposition of orders placed prior to revocation. Assigns preference rating to material for production.	12-12-41 3-14-42 10-9-41	5-31-42 3-31-42	Tanks and Combat Vehicles A. B. Hood
Amendment No. 1 Amendment No. 2. Extension No. 1 P-27 (Not issued) P-28 do P-29 do P-30 (Not issued) P-31	A-1-a A-1-a A-1-d A-1-a A-1-d A-1-a	Health supplies rating plan Foundry equipment and repair parts. Foundry equipment and repair parts.	Assigns preference rating to material Assigns preference rating to material Permits supplies and sub-suppliers to extend rating assigned under P-31 which expired on 5-30-42. Assigns preference rating to materials do	8-25-41 9-5-41 11-25-41 6-5-42	5-31-42 11-30-41 5-30-42	Health Supplies Tools Tools M. H. Luce L. R. Hawkins L. R. Hawkins
Extension No. 1 P-31-a	A-10 A-1-c	Farm machinery: Parts for maintenance and repair. Farm machinery and equipment.	PD-79 PD-88 PD-88	8-20-41 8-20-41 10-31-41 11-29-41	2-14-42 10-31-41 11-30-41 2-14-42	Farm Machinery Farm Machinery W. R. Tracy W. R. Tracy
Revoked by P-95 P-32 Revoked by P-95 P-33 Extension No. 1 Amendment No. 2 Extension No. 2 P-34 (Not issued) P-35	A-8 A-1-f A-1-f A-1-d	Armored half-track vehicles Radiosondes	Raises rating Assigns preference rating to material Directs disposition of unfilled orders placed prior to revocation. Assigns preference rating	As assigned 3-14-42 8-26-41	3-31-42 5-31-42 2-28-41	Tanks and Combat Vehicles A. B. Hood Governmental Requirements J. Bolger

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Order No.	Subject	Rating	Purpose	Related Forms	Effective	Expires	Branch	Administrator
Amendment No. 1 Extension No. 2 P-39	Arc welding and resistance welding machines.	A-1-d	Extends order to 4-30-42.		2-18-42	4-30-42	Tools	L. R. Hawkins
P-40	Industrial lift trucks	A-1-c	Assigns preference rating to material		4-29-42	6-30-42		
Amendment No. 1		A-1-g	Assigns preference rating to material	PD-385	10-14-41	1-10-42	General Industrial Equipment	D. G. Darling
Extension No. 1 Extension No. 2 P-41 through P-41-c	Defense projects: Construction, maintenance, and operation.	A-1-a	Redefines power driven trucks; adds repair parts.		12-30-41			
P-42	Canning machinery and equipment: Field ration and meat cans.	A-3	Assigns preference rating to material		1-10-42	8-10-42		
Extension No. 1 P-42-a	Canning machinery and equipment: Salmon cans.	A-7	do		3-7-42	5-10-42		
P-43	Research laboratory supplies and equipment.	A-2	Assigns preference rating	P-D88, PD-93, PD-93-A, PD-107	8-27-41	8-31-42	Aircraft	A. G. Nye, Jr.
Extension No. 1 Amendment No. 1 P-44 (Not issued)	Fire apparatus	A-2	Assigns preference rating to material		8-21-41	12-1-41	Food	T. J. Sweet
P-45	Motorized fire apparatus	A-2	Raises rating for reagents to A-1-a and extends order to 10-31-42.		9-12-41	3-12-42	Food	T. J. Sweet
Extension No. 1 Revised 2-28-42 No. 1 P-45-a	Fire-fighting equipment	A-3	Assigns preference rating to material for production.		8-28-41	2-28-42	Safety and Technical Equipment	H. E. Barnard
P-46	Utilities: Maintenance, repair and supplies.	A-10	Assigns preference rating to material for production.		2-28-42	8-31-42		
			Assigns preference rating to material for production.		2-28-42	4-18-42	Safety and Technical Equipment	G. Angell
			Assigns preference rating to material for production.		4-13-42	6-30-42		
			Assigns preference rating to material for production.		11-22-41	5-31-42	Safety and Technical Equipment	G. Angell
Amendment No. 4 Extension No. 2 P-46-a	Utilities: Maintenance and repair.	A-3	Assigns preference rating to delivery of material.	PD-193, PD-193-a, PD-193-b, PD-193-c, PD-194-a, PD-194-b, PD-194-c, PD-195-a, PD-195-b, PD-195-c	9-17-41	3-31-42	Power	C. F. Kells
Amendment No. 4 P-46-b	Utilities: Maintenance, etc.	A-3	Covers installations in rated projects		9-12-42	10-10-42	Power	C. G. Kells
P-47	Air transportation facilities: Maintenance and repair.	A-3	Extended to 10-10-42		9-30-42			
			Permits short utility extension to facilities of Army, Navy, Maritime Commission.		7-23-42			
			Allows same rating on iron, steel and copper for facilities as for repairs.		9-12-42			
			Permits connections under certain conditions.		9-25-42			
			Assigns preference rating to delivery of material.	PD-96	9-6-41	When revoked	Aircraft	A. G. Nye, Jr.

Interpretation No. 1 Amendment No. 1 Amendment No. 2 P-48 (Canceled) P-49 (Not issued) P-50 do P-51	A-1-j A-1-a	Raises rating Raises assigned rating to A-1-a		8-12-42			
Canning machinery and equipment. Aircraft accessories. Textile machinery and equipment: Maintenance and repair. Motor trucks, truck trailers, passenger carriers.	A-3 A-10 A-10 A-8 A-3	Assigns preference rating Assigns preference rating Assigns preference rating to material Assigns preference rating to material	PD-88	9-22-41 9-13-41 12- 4-41 2-28-42 9-12-41 10-15-41 11- 6-41 12-31-41 1-23-42 4- 2-42 3- 6-42 3- 1-42 5- 1-42 9-22-42	3-18-42 3- 1-42 6-30-42 11-30-41 12-31-41 1-31-42 2-28-42 3-31-42 4-30-42 5-31-42 When revoked	Food Textile, Clothing, and Leather Automotive	T. J. Sweet R. S. Dempsey J. J. Donovan
Defense housing projects		Further provides for assignment of preference rating. Assigns preference rating to material do	PD-105, PD-105-B			Construction Bureau	S. W. Jones New York Office
Mines: Maintenance and repair.	Varies.	Assigns preference rating to material for operation.	PD-119, PD-400, PD-1400-a, PD- 400-b, PD-400-c, PD-542	4-20-42 9-17-41 9-22-41 12- 2-41 12-31-41 3- 3-42 4-13-42 5-15-42	4-20-42 4-30-42 When revoked	Mining	Dr. M. H. Stow
Assigns preference rating to explosives. Removes clause in definition of "mining enterprise." Provides A-10 rating for repair and maintenance of houses. Reassigns preference ratings to materials for repair parts. Assigns preference rating to material for production.	A-1-a, A-1-c, A-8, A-10 A-3		PD-25-a	8- 8-42 As assigned 3-19-42 4-13-42	When revoked	Mining	Dr. M. H. Stow
Restricts delivery of machinery produced from materials obtained under a preference rating, only to operators as defined in P-56 or P-58 or to producers as defined in P-68 or P-73, or to fill orders with rating assigned by such preference orders. Assigns preference rating to material	A-3					Mining	Dr. M. H. Stow
Replacement parts: Autos and light trucks.	A-10			9-18-41	12-31-41	Automotive	J. J. Donovan
Amendment No. 1 Amendment No. 2 Extension No. 1 P-52 Superseded by P-109 P-53 Amendment No. 1 Amendment No. 2, Extension No. 1 P-54 Extension No. 1 Extension No. 2 Amendment No. 1 Amendment No. 2, Extension No. 3 Amendment No. 3 Extension No. 4 Extension No. 5 Amendment No. 4, Extension No. 6 P-55 Amended. Amendment No. 1 P-56 Amendment No. 1 Amendment No. 2 Amendment No. 3 Amendment No. 4 Amendment No. 5 As amended 3-2-42, Amendment No. 2 As amended, Interpretation No. 1 Amendment No. 3 P-56-a Amendment No. 1 Amendment No. 2 Amendment No. 3 P-57							

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Order No.	Subject	Rating	Purpose	Related Forms	Effective	Expires	Branch	Administrator
Extension No. 1 Amendment No. 1, Extension No. 2 Amendment No. 2 P-58	Defense projects: South American copper mines.	A-1-d	Assigns preference rating to materials		11-14-41 1-23-42	1-31-42 6-30-42		
Amendment No. 1 Extension No. 1 As amended 7-14-42		A-3 A-1-d A-1-a, A-1-d, A-3	Assigns A-1-a rating for 25 percent of material needs, A-1-d for 35 percent and A-3 for balance.		2-17-42 10- 8-41	9-30-42	Mining	Dr. M. H. Stow
P-59 (Not issued) P-60 (Not issued) P-61 Superseded by M-9-b amended P-62	Copper scrap, copper base alloy scrap.	A-10	Assigns preference rating	PD-126, PD-130	10-13-41	12-31-41	Copper	M. Schwarz
Amendment No. 1, Extension No. 1 P-63 (Not issued) P-64 do P-65 P-66 (Not issued) P-67 do P-68	Laboratory equipment and reagent chemicals.	A-5	Assigns preference rating to material	PD-93, PD-93-a	11-15-41	3-31-42	Safety and Technical Equipment.	H. E. Barnard
	Marine paints	A-3	Assigns preference rating	PD-82	3-30-42	6-30-42		
Amendment No. 1 Amendment No. 2, Extension No. 1 Amendment No. 3 Amendment No. 4	Iron and steel production: Maintenance and repair.	Varies	Assigns preference rating to delivery of material.	PD-228	10-31-41	6-30-42	Iron and steel	F. A. Weidman
		Varies			1- 8-42 2-27-42	When revoked		
		Varies AA-3, A-1-a, A-1-c	Reassigns ratings to deliveries of materials for maintenance, repair, and operating supplies for the steel industry.	PD-148	4-11-42 8-10-42			
P-69 (Not issued) P-70 do P-71	Private housing projects	A-10	Assigns preference rating to material for completion.		As assigned	3-31-42	Construction Bureau	A. Achinstein
P-72 Revoked P-73	Elevator and escalator. Repair parts. Nonferrous smelters and refiners: Repair, maintenance, and operation.	A-3 Varies	Assigns preference rating to material for production. Assigns preference rating to material	PD-212, PD-248, PD-248-a	As assigned	When revoked	Mining	W. A. Nelson
As amended 7-14-42		A-1-a, A-1-c, A-3, A-10	Provides rating for maintenance and repair, operating supplies and expansion. Restricts use of A-1-c rating to 25 percent of dollar value of material ordered in any calendar quarter.	PD-248	7-14-42	10- 1-42		
P-74	Heat-treating furnaces	A-1-c	Assigns preference rating to material for production.		11-22-41	5-15-42	Tools	L. R. Hawkins
Interpretation No. 1 Extension No. 1 P-75	Tackle blocks	A-1-c	Assigns preference rating to material		12-31-41 5-11-42 10-22-41	6-30-42 When revoked 5-30-42	Production Requirements Containers	A. L. Williams
P-76	Container steel	A-4	do	PD-156-a	11-17-41			C. Dailey

Amended

P-77
Extension No. 1
Extension No. 2
P-78
Superseded by P-90
P-79

Steel containers

A-4

Assigns preference rating to material for rebuilding.

PD-156-a

12-31-41

When revoked
1-25-42

Tools

L. R. Hawkins

P-80 (Not issued)

P-81 do

P-82

P-83 Revoked

P-84

Interpretation No. 1

Amendment No. 1

P-85

P-86

P-88

Amendment No. 1

P-89

Amended

Amended Interpretation No. 1

Amendment No. 1

Amendment No. 2

Amendment No. 3

P-90

Supersedes P-6

Amendment

Amendment

Amendment

P-91 Revoked

P-92

P-93 (Not issued)

P-95

Revoked

P-96 (Not issued)

P-97 (Not issued)

Machine tools

A-1-c

Assigns preference rating to material for rebuilding.

Conveyor machinery

A-3

Assigns preference rating

Non-metal containers: Iron and steel products used.

A-5, A-8

Assigns preference rating

Blind-made products

Petroleum supply houses

A-8

A-8

Assigns preference rating to material

Assigns preference rating

Plumbing and heating: Emergency repairs.

A-10

Assigns preference rating to material

Defines "emergency repairs" as only those required by actual or imminent break-downs.

Assigns emergency repair rating to cooking stoves except those restricted by L-83.

Assigns preference rating to material for production.

do

Assigns preference rating to material

Assigns A-1-j rating to supplies to replace inventory delivered.

Assigns preference rating to material

do

do

Assigns A-1-c and A-3 rating for maintenance material and limits application of A-1-rating.

Removes inventory restrictions. Extends expiration of Amendment No. 1. Rating on List 1 of PD-25-a is raised to A-1-a.

Assigns preference rating to material for production on three months basis.

Assigns preference rating to material for production for manufacturers with less than \$100,000 annual volume.

Directs procedure for AA rated applications.

do

Assigns preference rating

Assigns preference rating to material for use in defense training classes for welders.

Assigns preference rating to material for production.

As assigned

As assigned

As assigned

6-17-42

1-23-42

3- 3-42

When revoked

When revoked

When revoked

When revoked

Tools

Chemicals

Transportation Equipment

L. R. Hawkins

H. H. Meyers

A. Stevenson

D. L. Watson

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Order No.	Subject	Rating	Purpose	Related Forms	Effective	Expires	Branch	Administrator
P-98	Petroleum: Production, refining, transportation, marketing.	Varies	Assigns preference rating to material		1-14-42		Petroleum Coordinator	R. E. Allen
P-98-a Revoked	Petroleum: Production outside of United States.	Varies	Assigns preference rating to material					
P-98-b	Petroleum; production		Assigns ratings supplanting P-98		9-15-42			
P-99 (Not issued)								
P-100 Supersedes P-23 Amended	Repairs, maintenance and operating supplies.	A-10	Assigns preference rating to material	PD-305, PD-306 PD-304	12-18-41 2-10-42	When revoked When revoked	Maintenance and Repair	D. C. Gallagher
Interpretation No. 1	Repairs, maintenance, and operating supplies.		Restricts application of rating to critical materials such as metal, burlap, etc.		2-13-42		Maintenance and Repair	D. C. Gallagher
Amendment No. 1					2-28-42			
Amendment No. 2			Excludes durable office equipment		3-9-42			
Interpretation No. 2			Excludes fire hose, etc.		3-23-42			
Interpretation No. 3			Prohibits use of rating to obtain ferrous metal for packaging supplies.		4-16-42			
Amendment No. 3			Assigns preference rating to material for production.		8-28-42			
P-101	Round or flat steel wire: Printing, publishing.	A-8	Assigns preference rating		As assigned	When revoked	Printing and Publishing	J. I. Burns
P-102 (Not issued)	Refinery operation: British	A-1-c						
P-103 Revoked	Refinery operation				2- 3-42			
P-103-a Revoked								
P-104 (Not issued)								
P-105 do	Copper or copper-base alloy rolling, drawing or extrusion mills: Repair, maintenance and operation.	Varies	Assigns preference rating to material	PD-258	As assigned	When revoked	Copper	W. S. Schneider
Amendment			A-1-c rating allowed suppliers' maintenance and repair parts to replenish inventories.		5-14-42			
P-107	Medium and heavy trucks, truck trailers, passenger carriers and school bus bodies: Replacement parts.	A-3	Assigns preference rating to material for production.		1-22-42	3-31-42	Automotive	J. J. Donovan
Amendment No. 1	Fire protective equipment	A-2	Assigns preference rating	PD-25-A PD-25-a, PD-82	3- 5-42 As assigned	12-31-42 4-18-42	Safety and Technical Equipment.	G. Angell
P-108	Aircraft products	A-1-a	Assigns preference rating to material...		2-20-42	6-30-42	Aircraft	A. G. Nye, Jr.
Amended	Aircraft products	A-1-a	Permits extension of rating by suppliers for necessary operating supplies.		3-11-42	6-30-42	Aircraft	A. G. Nye, Jr.
Amendment No. 1			Clarifies provisions for completing deliveries in case of revocation or expiration of order.		5- 8-42			
Amendment No. 2			Assigns preference rating to material for production.		6-17-42			
P-100-a	Aircraft products	A-1-b	Clarifies provisions for completion of deliveries in case of revocation or expiration.		3-11-42	6-30-42	Aircraft	A. G. Nye, Jr.
Amendment No. 1					6-19-42			

Amendment No. 1	Low cost remodeling projects.	A-5	Assigns preference rating to material for delivery.	PD-406	As assigned	When revoked	Construction Bureau	S. W. Jones New York office
P-110								
P-111 (Not issued)								
P-112 do								
P-113 do								
P-114 do								
P-115	Fruit and vegetable canning plants.	Varies	Assigns preference rating to material.	PD-285	2-11-42	12-31-42	Food	R. E. Arnold
P-117 (Not issued)								
P-118	Plants processing or producing dairy products.		Assigns preference rating to material.	PD-413, PD-414	4-16-42	6-30-42	Food	W. J. Parsonson
Amendment No. 1								
Amendment No. 2								
Interpretation No. 1			Extends order and raises rating. Makes ratings available only for primary processing operations. Extends to 12-31-42.		4-27-42 6-27-42	6-30-42 9-30-42		
Amendment No. 3								
P-119 (Not issued)								
P-120	Producers and basic fabricators of aluminum and magnesium: Repair, maintenance, operating supplies.	Varies	Assigns preference rating to material.	PD-371, PD-372	As assigned	When revoked	Aluminum and Magnesium	A. Lowery
P-121 (Not issued)								
P-122	Military and Naval Aircraft	A-1-a, A-1-b	Assigns higher ratings to certain deliveries.		3-10-42		Aircraft	A. G. Nye, Jr.
P-123	Defense projects: Maintenance, repair, and operation.	Varies	Assigns preference rating to material.		As assigned	When revoked	Rubber and Rubber Products	Dr. H. S. Rogers
P-124 (Not issued)								
P-125 do								
P-126	Refrigeration and air-conditioning machinery and equipment: Emergency servicing.	A-1-a, A-3, A-8	Assigns preference rating to material.	PD-472, PD-471, PD-399	4-20-42	6-30-42	Air-Conditioning and Commercial Refrigeration	R. H. Tait
Amendment No. 1								
Amendment No. 2								
P-127 (Not issued)								
P-128 do								
P-129	Communications, Maintenance and repair, operating supplies.	A-3	Permits suppliers to extend ratings in accordance with Priorities Regulation No. 3 as amended. Fixes high preference rating for repair material.	PD-534, PD-537, PD-538	4-23-42	9-30-42	Communications	L. H. Peebles
Amended								
Amendment No. 1								
P-130	Communications: Operating construction under \$50.00.	A-1-j	Raises assigned rating to copper deliveries.	PD-534, PD-537, PD-538, PD-539	7-28-42			
Amended			Removes wire telephone communications systems from provisions of order. Assigns preference rating to material.		9- 8-42		Communications	M. A. Cook
Amendment			Raises assigned rating to copper deliveries and makes order consistent with Priorities Regulation Nos. 1 and 3 as amended. Assigns ratings to deliveries of materials; restricts inventories, deliveries, use of ratings, use of materials; regulates sales of material from excess stock.	PD-537, PD-538, PD-539	4-23-42	9-30-42	Communications	L. H. Peebles
					7-28-42			
					9- 8-42		Communications	M. A. Cook

Forms to Use with Priority Orders

Forms recently declared obsolete are marked with star (*).

Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
PD-1-x	Distributors' application for preference rating.	L-63	On application		2	Branch.
PD-3-a	ANMB preference rating					
PD-4X	Rerating direction (to be used by Government officials only).	Priorities Regulation No. 12			3	1 to Prime Contractor 1 to Supply Service or Bureau 1 to ANMB
PD-4X-1	Rerating direction (to be used only by Government officials for rerating orders for aircraft and components).	Priorities Regulation No. 12			4	1 to Prime Contractor 1 to Supply Service or Bureau 1 to Contracting or Inspection Officer 1 to ANMB
PD-4Y	Rerating certificate	Priorities Regulation No. 12				
★PD-6	Tabulation of extension of preference ratings.	P-2	Weekly	Preceding week	1	Branch
★PD-6-a	Alternative form of report-certification to accompany purchase orders furnished by reporting firm.	P-41, P-41-a, P-41-b, P-38, P-42-a, P-51	As required	do	1	do
★PD-7	Synthetic rubber requirements, July 1941. Schedule 2, synthetic rubber, non-defense and indeterminate requirements, July 1941.	M-13	6-30-41	July 1941	1	do
★PD-7	Synthetic rubber and plasticized resin requirements.	M-13	5th of month	Succeeding month	1	do
★PD-7	Synthetic rubber requirements Schedule 1.	M-13	20th of month	do	2	Synthetic Rubber Section of the Branch
PD-7	Synthetic rubber requirements for Schedule 2.	M-13	20th of month	do	2	do
PD-9-c	Application for allocation of Tungsten for metallic and nonmetallic uses for delivery.	M-29	20th of month	do	4	1 to Supplier, 3 to Branch with PD-9-A or 9-B
★PD-9-d	Report of consumption of tungsten.	M-29 as amended	20th of month	Preceding month	1	Branch
★PD-12	Report of production of Copper Alloy and Copper Base Alloy products.	M-9				do
PD-25-a	Application for priority assistance under Production Requirements Plan.	Priorities Regulation No. 11	By 8-10-42	Fourth quarter, 1942	6	do
★PD-25-c-1	Customer's affidavit of Defense Requirements.	P-6-a	On delivery of airplane		1	Branch
★PD-25-c-2	do	P-6-a			1	do
PD-25-f	Application for assistance in expediting delivery of materials authorized under Production Requirements Plan.	P-90	On application	Succeeding quarter	2	do
PD-25-f	do	P-90	On application	Succeeding month	5	do
PD-25-f	Application for Interim Assistance under Production Requirements Plan.	P-90	On application		5	do
★PD-25-g	Monthly report of extension of ratings (other than those authorized on PD-25-1) to obtain "As Required" or "Special Order" items under the Production Requirements Plan.	P-90	10th of month	Preceding month	3	do
★PD-25-x	Application for priority assistance under modified Production Requirement Plan.	P-90	On application	Calendar quarter	4	Branch, Ref. L. P.
PD-26-a	do	M-1-f	15th of month	2d succeeding mo.	3	do
PD-26-m	Recapitulation of proposed shipments of magnesium.	M-2-b	20th of month	Succeeding month	3	do
PD-27	Schedule I detailed application for nickel required for melting.	M-6-a	20th of month	Succeeding month	3	2 to Branch. 1 to International Nickel Co., 67 Wall Street, New York City
PD-27	Schedule II summary of detailed application for nickel for melting.	M-6-a	20th of month	do		do
PD-27-a	Detailed application for nickel residues, salts, oxides, and carbonates for delivery.	M-6-a	20th of month	do	2	Branch
PD-29	Schedule 1-A—Allocation of cork approved by War Production Board.	M-8, M-8-a				

★ Obsolete

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
PD-29	Combined schedules Nos. 1, 2, and 4 Report on cork.	M-8-a as amended	10th of month	Preceding month	2	Branch
PD-33	Synthetic rubber producers' stocks, production and orders.	M-13	5th of month	Succeeding month	1	do
PD-36	Synthetic rubber requirements	Various	As instructed	Succeeding month	2	do
PD-36-a	do	M-13, M-46	When requested		2	do
★PD-37 (OPM-40)	Report on production of duty-free refined copper, April 1941.	M-9-a	On receipt	April 1941	1	Bureau of Research and Statistics, Washington, D. C.
★PD-39	Informal questionnaire	M-1-a	With PD-26, 6-20-41	July 1941	3	do
PD-40-a	Aluminum, quarterly report of receipts, consumption, and inventories for 3 months ended 6-30-42.	M-1-f	7-20-42	2d calendar quarter	2	do
PD-40-a Aircraft	Aluminum: monthly report of receipts, consumption, and inventory of aircraft parts manufactured.	M-1-f	15th of month	Preceding month	3	2 to Branch, 1 to Aircraft Scheduling Unit, Dayton, Ohio
PD-40-m	Monthly report of receipts, consumption and inventories for users of magnesium.	M-2-b	15th of month	Preceding month	3	2 to Branch, 1 to Aircraft Scheduling Unit, Dayton, Ohio
★PD-49	Report on stocks, receipts, consumption and shipments of rubber.	M-15-b as amended	10th of month	Preceding month	1	do
PD-49 rev.	do	M-15-b	10th of month		1	Branch
★PD-50	Customer's sworn statement (To be filed with Suppliers pursuant to General Preference Order No. M-11 as amended).	M-11 as amended	Before receiving delivery		1	Producers
★PD-50-a	Producer's statement of compliance with General Preference Order M-11, as amended.	M-11 as amended	With PD-50			
PD-53-a	Schedule I: Detailed application for chromium for melting during October, 1942.	M-18	By 9-20-42	October	2	do
PD-53-b	Schedule II: Application for chromium statement of stocks and consumption.	M-18	20th of month	Succeeding month	3	2 to branch, 1 to supplier
PD-54	Statement of stocks and consumption of primary chromium chemicals to qualify for shipments.	M-18, M-18-a, M-18-b	8th of month	Present and preceding month	2	1 to branch, 1 to processor
★PD-56	Tabulation of preference rated orders placed during month pursuant to preference rating order P-14-a.	P-14-a	25th of month	Preceding month	1	Branch
★PD-56-a	Alternative form to PD-56	P-14-a, P-14-b				
PD-59	Inventory and requirements of copper.	M-9-b as amended	5th of month	Preceding month	3	do
★PD-59-a	Sales or purchases of copper or copper base alloys in intermediate form.	M-9-a	With PD-59		3	do
★PD-59-c	Deliveries of copper or copper base alloys.	M-9-a	10th of month	Preceding month	3	do
PD-59-d	Scheduled deliveries of copper or copper base alloy products.	M-9-a	5th of month	Succeeding month	4	do
★PD-60	Analysis of inventory of duty-free copper for domestic consumption.	M-9				do
★PD-60-b	Report of inventory of copper for domestic consumption for month.	M-9-a	10th of month	Preceding month	3	do
PD-62	Application for allocation of zinc oxide.	M-11	On application	Succeeding month	3	do
★PD-63	Report of contracts or orders to which the preference rating assigned by preference rating order P-19 has been applied.	P-19	15th of month	Preceding month	1	do
★PD-63-a	Alternate report of PD-63	P-19				
PD-66-a	Application for allocation of lead.	M-38	15th of month	Succeeding month	2	do
★PD-68	Report of contracts and orders to which the preference rating assigned by preference rating order has been applied.	P-19-a, P-19-b	15th of month	Preceding month	1	do
★PD-68-a	Alternative report form to PD-68	P-19-a, P-19-b				
PD-69	Customer's Pig Iron order for shipment.	M-17	5th of month	Succeeding month	3	Producer
PD-70	Consumer's report of inventory and consumption of pig iron and scrap.	M-17	5th of month		1	Branch
PD-71	Pig Iron production data and summary of producer's schedule.	M-17	12th of month	Succeeding month	2	do
PD-71-a	Order relating to withholding of Pig Iron.	M-17				
PD-71-b	Pig Iron allocation order (monthly)	M-17				
PD-71-c	Pig Iron allocation order	M-17	By branch	Specified	1	Producer
PD-71-d	Pig Iron ordered, scheduled, and unscheduled.	M-17	15th of month	Succeeding month	2	Branch

★ Obsolete

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
PD-72	Calcium-Silicon requirements	M-20	25th of month	Succeeding month	2	1 to branch, 1 to supplier
PD-76	Copper Allocation Certificate	M-9-a				Jobber Dealer
PD-76-d	Refined copper allocation certificate (for less than carload lots).					
★PD-79	Requirements for scarce materials	P-29	10th of month	3 months	3	do
★PD-81	Report of preference rated purchase orders placed with suppliers.	Various	As specified	Preceding month	1	Respective branch
★PD-81-a	Alternative Report Form to PD-81.	Various				
★PD-82	Application for preference rating for deliveries of scarce materials necessary for defense products.	P-72, P-78, P-62	On application	3 months	3	do
PD-83	Steel warehouse report	M-21-b	15th of month	Preceding month	2	Bureau of the Census, Washington, D. C. Branch
★PD-83-a	Steel warehouse statement of deliveries.	M-21-b	9-15-41	1st quarter of 1941	4	Warehouse
PD-83-b	Steel warehouse Preference Rating Certificate.	M-21-b	By branch	Until revoked	1	
★PD-83-d	Classification instructions for steel warehouse monthly report PD-83.	M-21-b				
★PD-83-e	Warehouse statement requesting transfer of base tonnage of Schedule B products.	M-21-b as amended	On application		4	1 to relinquishing producer, 3 to warehouse unit of branch
PD-83-f	Producer's report on deliveries to steel warehouses.	M-21-b	4-15, 7-15, 10-15, 1-15	Preceding calendar quarter	2	Branch
PD-83-g	Steel warehouse request for extension of preference ratings higher than A-9.	M-21-b	On application		1	Producer
★PD-88	Application for preference rating order. (This form not to be used unless specified in applicable priority order or announcement.)	P-43, P-95, P-42, P-32, P-33	On application	Various	2	Respective branch
★PD-93	Monthly report of preference rated purchase orders placed with supplies.	P-43, P-42, P-62	As specified	Preceding month		do
★PD-93-a	Alternative report form to PD-93.	P-43, P-62				
★PD-94-a	Inventory, receipts and shipments of Zinc.	M-11 amended	15th of month	Preceding month	3	do
★PD-96	Application for preference rating for deliveries of scarce materials necessary for the maintenance and repair of Aircraft and equipment.	P-47	On application	3 months	1	do
PD-97	Aluminum used in manufacture of fixed condensers. Inventories and consumption (to be filed by all manufacturers of fixed condensers).	M-1	5th of month	Preceding month	1	do
PD-99	Statement of monthly capacities and production schedule of steel (net tons) from producers of steel products.	M-21	6th of month	Same month	3	do
PD-99-A	Iron casting and cast iron pipe producer's month report of capacities and production.	M-21	6th of month	do	3	do
PD-99-B	Steel forgings: Producers' monthly capacities and production schedule.	M-21	6th of month	do	3	do
PD-99-C	Steel castings—Producer's monthly report of capacities and production schedule.	M-21	6th of month	do	3	do
★PD-100	Statement of monthly capacity, allocation and rolling schedule of steel (net tons) from producers of steel products.	M-21	6th of month	do	2	do
PD-100	Statement of monthly capacities and production schedule of steel (net tons) from producers of steel products.	M-21	6th of month	do	2	do
PD-114	Application for authorization to enter into Toll Processing Agreement (to be submitted by owner of material).	M-1	On application		2	do
★PD-115	Application for preference rating	P-11-a	On application		1	do
PD-119	Monthly report of purchases	P-56	10th of month	Preceding month	1	Emergency Coordinator of Mines of the State Branch
PD-119-a	Monthly report for foreign mines: Receipt of machinery, supplies, maintenance items, and repairs purchased.	P-56		1 month	1	
★PD-120	Report of scrap metals dealer	M-9-a	10th of month	Preceding month	2	do
★PD-121	Report of copper scrap consumer	M-9-a, M-9-b	10th of month	do	3	do

★ *Obsolete*

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
★PD-121-a	Report of ingot makers, chemical plants and other melters (not including foundries) on copper scrap consumption.	M-9-b	10th of month	Preceding month	3	do
★PD-121-b	Report of foundries on copper scrap consumption.	M-9-b	15th of month	do	3	do
PD-122	Report of importers and distribution of cotton linters.	M-12	5th of month	do	1	do
PD-122-a	Alternative report form to PD-122.	M-12				
PD-123	(Actual) (Scheduled) deliveries of copper or copper-base alloys.	M-9-a	5th of month	Preceding month or succeeding mo.	3	do
PD-123-a	Deliveries of copper or copper base alloys for military uses.	M-9-a as amended	5th of month	do	3	do
★PD-123-b	Deliveries of copper or copper base alloys for industrial and civilian uses.	M-9-a as amended	5th of month	do	3	do
PD-124	Delivery schedule of proposed shipments of lead.	M-38, M-38-a	20th of month	Succeeding month	1	do
★PD-125	Report required of manufacturers of domestic mechanical refrigerators.	L-5		November, 1941	1	do
★PD-126	Application pursuant to paragraph (b) of Supplementary Order M-9-b for A-10 preference rating with respect to all deliveries of copper scrap and copper base alloy scrap.	M-9-b, P-61	On application		2	do
PD-127	Purchaser's certificate for chlorinated hydrocarbon solvents.	M-41 amended	At time of purchase		2	Supplier
★PD-130	Application pursuant to paragraph (b) of Supplementary Order M-9-b for A-10 Preference Rating with respect to all deliveries of copper scrap and copper base alloy scrap.	M-9-b and P-61	On application		2	do
PD-130	Application pursuant to paragraph (b) of Supplementary Order M-9-b for authorization to receive deliveries of copper scrap and copper base alloy scrap.	M-9-b	On application		4	do
★PD-134	Metal office furniture and equipment inventories and production metal inventories, receipts and consumption.	L-13-a	15th of month	Preceding month	2	Branch
PD-138 rev.	Report of shipments of iron and steel products.	M-21	10th of month	One month	3	Bureau of Census
PD-139 rev.	Report of unfilled orders and contracts for iron and steel products requested for shipment during month.	M-21	10th of month	Two months	3	do
★PD-143	Chlorinated rubber requirements by type of product and customer.	M-46	Before date of accompanying letter	Succeeding month	1	Branch
★PD-144	Chlorinated rubber receipts, consumption, inventories and requirements.	M-46		do	2	do
★PD-145	Application for specific allocation of Titanium Pigments.	M-44	On application	One month	3	do
★PD-146	Manufacturer's certificate	M-44	With purchase order	One month	2	Producer
PD-148	Application for preference rating for deliveries of scarce materials.	P-68	On application	1st 6 months of 1941	3	Branch
PD-149 rev.	Producers' report of stocks, production and shipments of iron and steel scrap.	M-24	10th of month	Preceding month	2	Bureau of Mines, Pittsburgh, Pa.
★PD-149-a	do	M-24	15th of month		2	Branch
PD-150	Consumers' report of stocks, consumption and production of iron and steel scrap.	M-24	10th of month	Preceding month	2	Bureau of Mines, Pittsburgh, Pa.
PD-150-a	Consumers' report of stocks of pig iron stocks, consumption and production of iron and steel scrap.	M-24	15th of month		2	Branch
★PD-150-b	Consumption of ferrous scrap and pig iron in tons.	M-24				
PD-151	Dealers' and brokers' report of stocks, receipts and shipments of iron and steel scrap.	M-24	10th of month	Preceding month	2	Bureau of Mines, Pittsburgh, Pa.
★PD-151-a	do	M-24	15th of month		3	Branch
★PD-152	Application for allocation for cobalt for metallic uses.	M-39	10th of month	Succeeding month	2	do
★PD-153	Application for allocation for cobalt chemicals for non-metallic uses.	M-39	10th of month	Succeeding month	2	do
PD-154-a	do	M-45 as amended	By branch	As specified	1	do
★PD-155-a	do	M-45 as amended	By branch	do	1	do

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
PD-156-a	do	P-76 amended	On application		4	do
★PD-157	Report of sales of rebuilt machine tools.	P-77	15th of month	Preceding month	1	do
★PD-158	Chlorine	M-19				
★PD-158-d	Consumption of chlorine for chemical manufacture.	M-19	2-16-42	1-1-40 to December 1941	1	do
★PD-158-e	Purchase of chlorine	M-19	2-15-42		1	do
★PD-159	Letter of certification (for chlorine report).	M-19	With reports		1	do
★PD-165	Request for name of supplier	PD-1	10 days after issuance of rating		2	Director of Priorities
PD-167	Appeal for relief	M-9-c as amended 5-7-42			3	do
PD-169	Steel plate schedule	M-21	12th of month	Succeeding month	2	do
PD-169-a	Summary of steel plate rolling schedule.	M-21-c	12th of month with PD-169	do	2	do
★PD-170	Domestic vacuum cleaners, manufacturers' monthly report.	L-18	15th of month	Preceding month	1	do
PD-171	do	L-18	25th of month following close of quarter	do	1	do
★PD-172	Application for permission to use copper or copper alloy materials in stock.	M-9-c	On application	As specified	4	do
★PD-173	Magnesium and magnesium products (other than powder) stocks, receipts and disposition.	M-2-b	15th of month	Preceding month	2	do
PD-174	Magnesium powder metal received, powder shipped, and inventories and disposition.	M-2-b	15th of month	do	2	do
★PD-179	Application for Preference Rating Order No. P-77.	P-77	On application		1	do
PD-180	Customer's order for shipment of phenols.	M-27 amended	15th of month	Succeeding month	2	1 to branch, 1 to producer
★PD-182	Report of coin operated scales, automatic phonographs, coin operated amusement and gaming machines.	L-21	15th of month	Preceding month	2	Branch
★PD-183	Application for preference rating, steel plate and welding electrodes (for use in operation of defense training classes for welders).	P-92	15 days before calendar quarter	3 months	4	Director of Vocational Training for Defense Workers, U. S. Office of Education, Washington, D. C.
★PD-189	Report required under par. (a) (4) (iv) of copper conservation order.	M-9-c as amended 12-10-41	12-31-41		4	do
PD-190	Purchaser's application order for chlorine for delivery.	M-19 as amended 2-25-42	10th of month, or 5th of mo.	Succeeding month	3	Supplier
PD-190-a	III: Distribution of chlorine requested by users.	M-19 amended and L-11	With PD-190 if a pulp and paper producer			
PD-191	Chlorine producers' monthly report of orders and scheduled shipment.	M-19 amended	15th of month	Succeeding month	2	Branch
★PD-191-a	Chlorine producer's delivery schedule (summary of orders by uses).	M-19	15th of month	do	2	do
PD-192	Production of, and iron and steel contained in domestic cooking appliances, iron and steel contained in shipment of repair parts, and stocks on hand.	L-23	20th of month	Preceding month	2	do
★PD-193-b	Water utility report of quarterly deliveries, withdrawals and inventories of materials.	P-46	30 days after close of quarter	Preceding quarters	1	do
PD-194-b	Electric utility report of quarterly deliveries, withdrawals and inventories of materials.	P-46	30 days after close of quarter	Preceding quarters	2	1 to branch, 1 to Federal Power Commission, Washington, D. C.
PD-195-b	Natural and manufactured gas utility report of quarterly deliveries, withdrawals and inventories of materials.	P-46	30 days after close of quarter	Preceding quarters	1	do
★PD-196	Certificate of use	M-8	With purchase order	30 days	2	Crown Manufacturer
★PD-197	Report of shipments of lead and lead alloys, including antimonial lead.	M-38	1-10-42	December, 1941	2	Branch
PD-200	Application for project rating	P-19	On application	Until completion of project	5	Field Office of Federal Housing Administration
★PD-200 rev	Application for priority assistance or application for authority to begin construction requiring no priority assistance.	L-41	On application		3	Prescribed agency

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★PD-200-a	Application for project rating	L-41	On application		4	Field Office of FHA
★PD-201	Shot and bullet core steel allocation form.	M-21-f	Upon issuance		1	Applicant
★PD-201-a	Steel allocation order	M-21				
★PD-202	Steel allocation order—Series B	M-21				
★PD-202-a	Steel allocation order	M-21				
★PD-203	Appeal for relief to be filed by producers of domestic cooking appliances.	L-23	On application		2	Branch
★PD-205	Domestic laundry equipment manufacturers' report.	L-6	15th of month	Preceding month	1	do
★PD-206	Report required to accept delivery of direct-consumption sugar.	M-55	Before accepting delivery		3	do
★PD-208						
★PD-209						
PD-209-a	Schedule II, application for vanadium for shipment and statement of stocks and consumption.	M-23-a	5th of month	Succeeding month	1	do
PD-209-a	Schedule Im detailed application for vanadium required for melting.	M-23-a	20th of month	do	2	do
PD-209-b	Application for allocation of va-	M-23-1	20th of month	do	4 with PD-209-a	1 to supplier, 3 to Branch
★PD-210	Inventory of iridium and iridium alloys.	M-49	1-15-42	1-1-42	1	Branch
★PD-211	Report of sale or transfer of iridium or iridium alloys.	M-49	10th of month	Preceding month	1	do
PD-212	Application for serial number	P-73	On application	As specified	1	do
★PD-213	Application for allocation of tin	M-43	20th of month	Succeeding month	2	Branch
PD-214-a (OPC)	Information required to obtain exception on development program for oil, gas, or condensate fields or for construction of other production facilities.	M-68	On application		4	Office of Petroleum Coordinator, New Interior Building, Washington, D. C.
PD-214-b	Information required to obtain an exception for the development of any property by any operator in any oil, gas or condensate field.	M-68	On application		4	do
PD-214-c (OPC)	Information required to obtain exception for new construction of gasoline, gas return, pressure maintenance or cycling plants.	M-68	On application		4	do
★PD-215	Information required to warrant consideration of an exception for permission to construct, reconstruct, expand or remodel a structure or install equipment.	M-68-c amended	On application		4	do
★PD-220-a	Steel allocation order	M-21				
★PD-221	Inventory of heat-resistant chrome steel containing 4% or more chrome as of 1 8 42.	M-21-d	1-15-42	December 1941	1	Branch
PD-222-b	Certificate of disposition of imported strategic materials.	M-63	When entry or withdrawal is filed		2	Collector of Customs
PD-222-c	Application for authorization to contract or arrange for importation of strategic material.	M-63	On application		2	Branch
PD-223	Consumer's application for shipment of toluene.	M-34	By 10th of mo.	Succeeding month	2	1 to Producer, 1 to Branch
PD-223-a	Purchaser's application for shipment of benzene.	M-137	On application		2	1 Supplier, 1 Branch
PD-224	Delivery Schedule of toluene producers and production, purchases and stocks for second preceding month (including deliveries for own consumption).	M-34	15th of month	Succeeding month	2	Branch
PD-224-a	Benzene producers' and distributors' report.	M-137	15th of month	do	3	do
★PD-226 rev	Report of copper scrap producer	M-9-b	15th of month	Preceding month	3	do
PD-226-a	Report of copper nickel scrap, nickel silver scrap, nickel bronze scrap, and nickel brass scrap.	M-9-b Amended	19th of month	do	3	do
★PD-228	Producers' semiannual report pursuant to A-3 rating.	P-68	Beginning 3-31-42	6 months	3	do
PD-229	Application for relief	M-43-a	On application		2	do
PD-234	Application for relief	M-38-c	On application		2	do
PD-237	Schedule of allocation of ammonia and derivatives.	M-62, M-163, M-164, M-165	10th of month	Succeeding month	3	do
★PD-238	Customer's report on receipts of sodium nitrate.	M-62		1940, 1941, 1942	1	do
★PD-239						
★OPM-240	Rubber heels and soles production, sales, stocks crude rubber consumption and productive capacity.	M-15-B	On receipt	6-1-41 to 10-31-41	1	do
PD-248	Purchase of materials	P-73	15th of month	Preceding month	2	do

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
★PD-248-a PD-249	Supplier's application Nonferrous report of scrap dealer	P-73 M-1-d, M-2-b, M-9-b, M-38-b, M-43, M-11, M-5	15th of month	do January 1942	2	do Bureau of Mines, Col- lege Park, Md.
★PD-250 PD-251	Report of asbestos items produced and amount of asbestos used.	M-79	10th of month	Preceding month	1	Branch
PD-252	Monthly production of asbestos items and amount of asbestos used.	M-79	10th of month	do		do
★PD-253 PD-254	Asbestos Consumption and stocks of scrap and secondary lead and tin, July, 1942.	M-70 M-72	By 8-10-42	July 1942	2	Bureau of Mines, Col- lege Park, Md.
PD-254-a	Secondary lead: producer's report on production, stocks, shipments.	M-72	10th of month	Preceding month	1	Branch
★OPM-256	Reclaimed rubber production, pro- duction capacity and finished goods inventory.	M-15-b	12-31-41	1938, 1939, 1940, 1941	1	do
★PD-258	Application for serial number	P-106	On application	1941	2	do
★PD-259	Copper shoe findings	M-9-c-1				do
★PD-260	Report of copper	M-9-c-1	On or before 4-15-42			do
★PD-261	Appeal for relief	M-9-c-1	On application	As specified	3	do
★PD-265	Tung oil (china wood oil, and oiti- cica oil inventories.	M-57	1-25-42	12-31-42	2	Branch
★PD-269	Can manufacturers' and canners' appeal for relief.	M-81	On application		2	do
PD-271	Application for hardship appeal or for specific allocation of material.	M-57, M-66	On application		3	do
PD-272	Receipts of aluminum scrap, and shipments.	M-1-d	15th of month	Preceding month	3	do
PD-282	Gas utility's report of proposed reductions of gas deliveries to consumers in case of curtailment.	L-31		1942 and 1943	2	do
PD-283	Utility's report of curtailment of gas deliveries during period of gas shortage.	L-31	5 days after shortage period	Shortage period	2	do
PD-284-a	Production of irrigation machinery and equipment for domestic use and statement of quotas and quota balances.	L-26	Upon receipt		1	do
PD-293	Natural corundum; production, shipments, stocks, and require- ments.	M-89	10th of month		3	do
PD-294	Natural corundum primary grain; consumer's monthly report of stocks, receipts and consumption.	M-89	By 10th of mo.	Preceding month	2	Materials Division
PD-295	Report of sale or transfer of rho- dium salts and rhodium plating solutions.	M-95	10th of month	Preceding month	1	do
★PD-296	Inventory of rhodium salts and rhodium electroplating solutions.	M-95	3-25-42	3-11-42	1	do
PD-298	Steel plate requirements for ship- ment.	M-21-c	1st of month	Second succeeding month	4	2 to Producer, 2 to Branch
PD-299	Steel plate consumption report for August 1942.	M-21-c	9-7-42	August	2	Branch
★PD-300	Application for priorities assist- ance.	Div. Admin. Order No. 7 Pri. Reg. No. 3	Upon applica- tion		5	Maritime Commission Washington, D. C.
PD-303-b	Application for allocation of mada- gascar flake graphite and/or au- thorization to put into process madagascar flake graphite in the manufacture of crucibles.	M-61	With purchase order		5	1 to Supplier, 4 to Branch
PD-304	Application for preference rating for deliveries of material from the United States.	P-100 amended	On application	1940, 1941, 1942	2	U. S. Priorities Special- ist Dept. of Munitions and Supply, Ottawa, Canada
PD-305	Action taken on application for relief from provisions of par. (G) of Preference Rating Order P- 100.	P-100		As specified	1	Applicant
★PD-306	Application for relief from the pro- visions of par. (G) of Preference Rating Order P-100 limiting in- ventories and consumption of repair, maintenance, and operat- ing supplies.	P-100 amended	15th of month	3 months	1	Branch
PD-307	Producer's report on deliveries of shot and bullet core steel.	M-21-f	Wednesday of each week	Preceding week	2	do
PD-308	Purchaser's report on receipts, consumption, inventories and scheduled requirements of shot and bullet core steel.	M-21-f	15th of month	do	2	do
PD-310	Application to acquire a new com- mercial motor vehicle.	M-100	Upon applica- tion		1	Local office of ODT

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
PD-312	Request for allocation of aluminum paint or pigment.	M-1-G	On application		2	Branch
★PD-313	Report of inventory of aluminum pigment.	M-1-G	15th of month	Preceding month	1	do
★PD-314	Application for approval of sale or other transfer of new light aircraft.	L-48	On application		3	do
PD-315	Application for assistance in obtaining maintenance, repair and operating supplies for the production of chemicals.	P-89	On application	1941	3	do
★PD-317	Inventory of domestic mechanical refrigerators.	L-5-b	3-1-42	2-14-42	1	do
★PD-323	Track-laying tractors: distributor's and dealer's report of finished product inventory as of 6-10-42.	L-53, Am. No. 1	6-25-42		2	Branch
PD-324	Manufacturers' unfilled orders for track-laying tractors and associated equipment.	L-53	3-7-42	2-19-42	1	do
PD-325	Block mica: Inventory, receipts, fabrication and sales.	M-101	15th of month	Preceding month	1	do
PD-326-a	Report of delivery of new commercial motor vehicles on government exemption permit PD-322.	M-100	Upon delivery		1	do
★PD-328	Unapproved gas masks or anti-gas device report—inventory and sales.	L-57	3-15-42		3	do
★PD-330	Report of rubber required for war orders.	M-15-b Amended	Before consuming rubber.		2	do
PD-333	Request for emergency assistance.		With request		1	do
PD-333-a	Work sheet: Request for emergency assistance.				2	District WPB Office.
★PD-334	Shellac.	M-106	5-9-42	4-1-42	1	do
★PD-335	Report on production of radio receivers and phonographs.	L-44	3-21-42	Various	1	do
PD-336	General supplies order, distributor's record, and report form.	L-63	20th of month	Preceding month	1	Retain until called for
★PD-337	Report of estimated inventories of parts and raw materials for domestic mechanical refrigerators.	L-5-C	As per L-5-c Amend. 1	4-30-42	1	Branch
PD-338	Jewel bearing material: production, receipts, stocks, and shipments.	M-50	15th of month	Various	3	do
★PD-340	Manufacturer's report on production and shipments of track-laying tractors and associated equipment.	L-53	3-12-42	Various	1	do
★PD-341	Maximum monthly consumption of rubber and latex permitted under List "A" and List "C" as amended (including Amendment No. 5 effective 3-1-42.)	M-15 amended	3-20-42	4-1-40 to 3-31-42	2	do
PD-344	Application for exemption from restrictions.	M-53	On application		2	do
★PD-346	Steel warehouse report on earmarked stocks of steel for aircraft.	M-21-b	10th of month	do	2	1 branch, 1 Administration Schedule Unit, WPB, Mutual Home Bldg., Dayton, Ohio.
PD-351	Railroads' application for priority assistance.	P-88	On application		3	Branch
PD-352	Railroads' report of values of inventories and material and equipment used for maintenance, repair and operating supplies.	P-88	45 days prior to calendar quarter.	Succeeding quarter	3	do
★PD-353	Request for material applying to steel allocation order — dated — on lend lease requisition No. — for steel forgings.		10 days after date of allocation order.		4	do
★PD-354	Inventory of coconut oil, babassu oil, palm kernel and other high lauric acid oils.	M-60	4-15-42	Day preceding issuance of M-60	1	do
★PD-355	Palm oil inventory report.	M-59	4-15-42	Day preceding issuance of M-59	1	do
★PD-356	Bed springs: beds, springs, and mattresses production, iron and steel content of finished production and employment.	L-49	Soon as possible	7-1-40 to 6-30-41	1	do
★PD-357	Beds, springs, and mattresses: production, iron and steel content of finished product and employment.	L-49	15 days after expiration of quarter.	Preceding quarter	2	do
PD-358	Schedule I detailed application for molybdenum required for melting.	M-110	20th of month	Succeeding month	2	do

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PD-359	Request for molybdenum for consumption. Schedule II report of inventory, consumption, and requirements for molybdenum.	M-110	20th of month	Succeeding month	2	Branch
PD-360	Application and allocation of molybdenum for delivery.	M-110	With purchase order		5	4 to Branch with PD-358, PD-359; 1 to Supplier with Purchase Order.
★PD-361	Glycerine: report of consumption in 1940, 1941 and January through June 1, 1942, and requirements for balance of 1942 by classes.	M-58	5 days after receipt	1940, 1941, 1942	1	Bureau of Census
★PD-362	Glycerine	M-58				
PD-363	Glycerine suppliers' schedule of orders.	M-58	20th of month	Succeeding month	3	Branch
PD-363-a	Glycerine producers', refiners' and distributor's statement of supply and summary of shipments to purchasers of 10,000 lb. or less.	M-58	15th of month	Current month	1	Branch
PD-366	Application for release of new typewriters to Federal Government agencies.	L-54-a	25th of month	Succeeding month	3	Procurement Division, Treasury Department
★PD-367	Information desired for consideration of appeals.	L-70	On application		4	Either District Director of Marketing Office of Petroleum Coordinator, Room 1104, Chanin Bldg., 122 E. 42d St., New York City, or District Director of Marketing Office of Petroleum Coordinator, Room 855, Subway Terminal Bldg., 417 South Hill St., Los Angeles, Calif.
★PD-369	Supplier's monthly report of deliveries.	L-70	20th of month	Preceding month	4	do
★PD-370	Electrical resistance material: inventory as of date of order.	L-65	4-14-42	3-30-42	1	Branch
★PD-371	Application for serial number	P-120	On application	5-31-42	3	do
PD-372	Quarterly report as required	P-120	25 of month	Preceding quarter	3	do
PD-376	Industrial and cuttable rough diamonds stocks and sales of loose diamonds and diamonds incorporated in unused tools and equipment.	M-109	15th of month	Preceding quarter	2	Branch—Chanin Bldg., N. Y. C.
PD-379	Report of production of farm machinery and equipment, during the calendar quarter ending 3-31-42.	L-26	By 4-15-42	1st quarter, 1942	1	do
PD-380	Report of antimony inventory consumption, products and supply requirements.	M-112	20th of month	Succeeding month	1	do
PD-381	Application for an allocation of antimony.	M-112	With PD-380		5	4 Branch, 1 Supplier
★PD-382	Firearms dealers affidavit	L-60	With PD-383			
PD-383	New shotguns, rifles, and pistols: inventory.	L-60	5 days after receipt	As of day received	3	Bureau of the Census, Washington, D. C.
PD-385	Industrial power trucks, producer's monthly report	L-112	15th of month	Succeeding month	1	Branch
PD-387	Export shipments of farm machinery and equipment and repair parts. Crawler tractors and crawler tractor repairs excluded.	L-26	10th of month	Preceding month	1	do
PD-388	Export shipments of farm machinery and equipment and repair parts during 1940, 1941 and 1942. Crawler tractors and crawler tractor repairs excluded.	L-26	By 6-10-42		1	do
★PD-391	Alloy steel melting schedule	M-21-a	Last day of month	Second following month	1	do
PD-391-a	Summary of alloy steel melting schedule.	M-21-a	Last day of month	do	1	do
PD-394	Report of nickel contained in nickel scrap.	M-6-c	15th of month	Current month	2	do
PD-395	Canadian application for preference rating for deliveries of material from the United States.	All "P" orders to which applicable	On application		2	DIO
PD-397	Application for authorization to install liquefied petroleum gas equipment.	L-86	On application		3	do

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
★PD-398	Manufacturers' report of inventories and production of shot-guns.	L-55	4-15-42	One month	1	D10
PD-399	Application for serial number emergency repairs and air conditioning repairs.	P-126	On application		3	do
PD-400-a	Application for quarterly quota purchase of repair parts by metal mines.	P-56	6-20-42	1941 through 9-30-42	3	do
PD-400-b	Application for quarterly quota purchase of repair parts by coal mines.	P-56	6-20-42	1942	2	do
★PD-400-b-4	Application for quarterly quota purchase of repair parts by coal mines.	P-56	By 9-15-42	Fourth quarter, 1942	2	do
PD-400-c	Application for assignment of quarterly quota for purchase of repair parts for nonmetallic mines.	P-56	7-1-42		2	do
★PD-402	Safety razor blades: production 1940, and inventory, 3-31-42. Steel consumption in 1940 and steel inventory 3-31-42.	L-72	10 days after receipt		1	do
PD-400	Monthly consumption of reclaimed scrap and/or rubber and/or latex.	M-15-b	By 4-15-42		1	do
★PD-404	New typewriter and parts: Manufacturers' report on production, shipments, and stocks.	L-54-a	10th of month	Preceding month	1	do
PD-408	Application for priority assistance under the Governmental Requirements Plan.		30 days before quarter covered	Calendar quarter	4	Bureau
PD-408	Section A: Equipment requirements.		30 days prior	Succeeding quarter	4	do
PD-408	Continuation Section A: Equipment requirements.					
PD-408	Section B: Requirements for maintenance and repair materials and operating supplies.		30 days prior	Succeeding quarter	4	do
★PD-409	Report on facilities of rolling mills and average monthly production of selected products.	M-21	4-25-42	1st quarter of 1942	2	do
★PD-410	Application for certificate authorizing purchase of new aircraft tires or tubes.	M-15-d	On application		2	1 retained by CAA inspector, 1 to Seller
PD-411	Application for authorization to place orders for elevators or for changes to elevators.	L-89	On application		1	Branch
PD-412-a	Application for release of unit heaters, unit ventilators, blast coils, and convectors.	L-107	On application		5	do
PD-414	Dairy products plants: application for authority to apply rating of A-3 for replacements (excluding material for addition or expansion).	P-118	On application		2	do
PD-415	Outline for application for authorization to purchase critical compressors.	L-100	On application		2	do
PD-416	Critical compressors: Manufacturers' monthly report.	L-100	25th of month		4	do
★PD-417	Appeals under Consumers' Durable Goods limitation orders.	Various	On application		2	do
★PD-420	Authorization to place an order for critical compressors.	L-100	Upon issuance		1	Applicant
PD-423	Authorization for specific transactions in restricted commodities.	L-54-c				
PD-427	Application for authorization to purchase new domestic mechanical refrigerators.	L-5-d	On application		2	Varies
★PD-428	Authorization for transfer of new domestic refrigerators.	L-5-d	do			
PD-431	Report of stock on hand of shipments of domestic mechanical refrigerators.		do			
★PD-432	Dealers, distributors, and manufacturers report on new domestic mechanical refrigerators shipped from 2-14-42 to effective date of order to the United States Army, Navy, Maritime Commission, Panama Canal, and pursuant to orders bearing a preference rating of A-10 or higher.	L-5-d	10 days after effective date of order	2-14-42 to effective date of order	1	Branch

★ Obsolete

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
PD-435	Customer's application for delivery of naphthalene.	M-105	20 days prior	Succeeding month	2	do
PD-436	Naphthalene supplier's summary of orders.	M-105	15th day of month	Following month	1	Branch
PD-440	High speed and tool steel: producers' report of metallic alloys required for melting.	M-21-a	5th of month	Succeeding month	6	do
PD-441	Consumer's quest for cadmium and cadmium-bearing materials.	M-65 amended	10 days before delivery date		2	do
PD-442	Cadmium production and distribution of stocks.	M-65	15th of month	Preceding month	2	Bureau of Mines
★PD-443	Authority to begin construction	L-41			1	Bureau
PD-444	Steel—warehouse monthly report of earmarked stocks for ship repair and conversion.	M-21-b	10th of month	Preceding month	2	1 to Branch, 1 to Coordinator for Ship Repair & Conversion, 11 Broadway, New York City
★PD-445	Power cranes, shovels, and rubber-tired construction equipment—manufacturer's report on finished goods, inventory of dealers, distributors, and manufacturers.	L-82 and L-82-a	5-15-42	5-2-42	2	Branch
PD-446	Power shovels, cranes, and rubber-tired construction equipment—manufacturer's report.	L-82, and L-82-a	10th of month		2	do
PD-447	Monthly report of rail	L-88	8th of month	Preceding month	3	do
PD-448	Power cranes, shovels, and rubber-tired construction equipment—manufacturer's application for release.	L-82, and L-82-a	On application		1	do
PD-450 rev	Dealers—inventory and deliveries of metallic zinc.	M-11 as amended	15th of month	Preceding month	3	do
PD-451	Production of remelt zinc	M-11 as amended	15th of month	Preceding month	3	Branch
PD-452	Report of producers on production and inventory of zinc	M-11 as amended		do	2	do
PD-453	Zinc allocation certificate	M-11	On application	Succeeding month	2	Branch after endorsement by Producer
PD-461	Steel tubing: producer's summary of tube schedule of shipments.	M-21	15th of month	Summary of PD-462		do
★PD-462	Steel tubing: producers, delivery schedule.	M-21	15th of month with PD-461	Succeeding month	2	do
PD-467	Extended surface equipment, report of shipments.	L-107	15th of month	Present month	1	do
★PD-468	Monthly report of manufacturers of rubber-tired hand trucks.	L-111	10th of month	Preceding month	1	do
★PD-470	Application for authorization to sell or transfer materials frozen by a War Production Board order or regulation.		On application		2	do
★PD-474	Iron foundries: capacity and facilities.	M-21	5-27-42		2	do
PD-477						
PD-478	Authorization to sell, transfer, or dispose of iron and steel inventory.	L-26-b				
PD-479	Producer's request for release of surplus iron and steel inventory.	L-26-b	On application	As specified	2	do
PD-480	Strategic mica: request to fabricate or cause to fabricate.	M-101 as amended	On application	do	1	do
PD-487	Customer's application for allocation of tantalum for delivery.	M-156	20th of month	Succeeding month	5	1 to Supplier with purchase order; 4 to Branch with 2 of PD-488
PD-488	Customer's report on receipts, consumption and inventory of tantalum and proposed consumption.	M-156	20th of month	Preceding month	2	Branch
PD-489	Processor's report on production, receipts, consumption and shipments of tantalum ores or concentrates.	M-156	27th of month	do	1	do
★PD-493	Production of, iron and steel contained in domestic heating stoves and iron and steel contained in shipments of repair parts.	L-23-c	6-15-42	7-1-40 through 6-30-41	2	do
PD-494	Production of, and iron and steel contained in domestic heating stoves, iron and steel in shipments of repair parts, and stocks on hand.	L-23-c	20th of month	Preceding month	2	do
PD-496	Application for and allocation of beryllium.	M-160	On application		5	4 with PD-497 1 to Supplier

★ *Obsolete*

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
PD-497	Report of beryllium inventory, consumption, products, source of supply, and shipments.	M-160	20th of month	Preceding, present, succeeding months	1	Branch
PD-498	Inventory of musical instruments.	L-37-a	6-16-42		1	do
PD-499	Complete fluorescent lighting fixtures, separate ballasts and separate replaceable fluorescent starters: producer's and distributor's inventories.	L-78	6-5-42	6-2-42	1	do
PD-500	Appeals form from specified orders	Various	On appeal		2	WPB Field Office
PD-500-b	Form for appeals	M-15-b, M-15-b-1, M-15-f, M-130	On appeal		1	Branch
PD-501	Government exemption permit for transfer of new passenger automobiles.	M-130			2	1 retained by Transferer, 1 for Transferee's records
PD-502	Report of delivery of new passenger automobiles.	M-130	Immediately		2	Branch
★PD-503	Fertilizer manufacturer's, purchasers, consumption and inventory of nitrogen.	M-163, M-164, M-165	2 weeks after receipt	7-1-39 to 6-30-42	1	do
★PD-504	Nitrogen compounds: receipts and consumption.	M-163, M-164, M-165	10 days after receipt		1	do
PD-512	Stocks of platinum or platinum alloys.	M-162	15th of month	do	2	do
PD-513	Sales or transfers of platinum alloys.	M-162	15th of month	do	2	do
PD-514	Purchases or receipts of platinum or platinum alloys.	M-162	15th of month	do	2	do
★PD-518	Consumption and shipments of copper-base alloys or copper by foundries.	M-9-a; M-9-b	6-5-42		3	Branch
PD-518-a	Authorization for foundries to receive and/or melt copper-base alloy ingots, copper scrap and copper-base alloy scrap.	M-9-o		1940 and 1941	1	Branch
PD-519	Certificate for purchase of closures for malt beverages or non-alcoholic beverages.	M-104 as amended	On purchase		2	1 to Branch, 1 to Supplier
★PD-527	Farmers' copper-wire requirements, PD-1-A Supplement.		Within 15 days		1	do
★PD-528	Manufacturers' monthly report on shipments of welding electrodes and rods.	L-146	18th of following month	Customer's reports filed by 10th of each month	3	do
★PD-529	Order board revised	E-1-b	Exhibit A: Group 1 June 15, Group 2 July 6	July, August, September	2	do
PD-530	Buses and electric railway cars: producer's monthly report of orders and deliveries.	L-101	6th of month	Preceding month	2	do
★PD-530-a	Continuation of PD-530.					
PD-540	Production of domestic sewing machines and attachments.	L-98	10 days after receipt	1940 and 1941	1	Branch
PD-542	Application for serial number	P-56	On application		1	do
PD-543	Shipping space certificate					
PD-543-a						
PD-544						
PD-550	Customer's application for delivery of ethyl cellulose.	M-175	15th of month	do	4	Supplier
★PD-552	Tire machinery and equipment: Application for authorization to acquire or rebuild.	L-143	On application		3	do
★PD-553	Tire machinery and equipment: Manufacturers' and dealers' statement of orders unfilled at date of issuance.	L-143	15 days after effective date of order		3	do
★PD-554	Plastics moulding machinery: Manufacturers' and dealers' request for authorization to deliver unapproved orders.	L-159	Upon request		3	do
PD-557	Phosphate plasticizers — producer's and distributor's allocation schedule.	M-183	25th of month	Succeeding month	3	do
PD-558	Phosphate plasticizers: consumer application for shipment and use.	M-183	15th of month	do	3	1 to Producer or Distributor; 2 Branch
PD-559	Diamond dies, Supplier's report on production, shipments, receipts, and stocks.	M-181	15th of month	Same month	4	Branch
PD-560	Report on stocks, receipts, and requirements of diamond dies and shipment of wire drawn through small dies.	M-181	15th of month	Same month	2	do

★ Obsolete

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Form No.	Title	Order No.	When filed	Period covered	Copies	Copies to—
PD-562	Manufacturers' report on shipments of elevators and shipping schedule for unfilled orders.	L-89	10th of month	do	1	Branch
★ PD-563	Report on composition milling cork products.	M-8-a	By 7-25-42	1940, 1941, 1942	2	do
PD-566	Office machinery: Manufacturers' report of production, shipments inventory and unfilled orders.	L-54-c	10th of month	Preceding month	1	do
PD-567	Application for allocation of restricted bauxite.	M-1-h	15th of month	Succeeding month	4	do
PD-568	Application for allocation of alumina.	M-1-h	15th of month	do	4	do
PD-571-a	Certification and transmittal list of new commercial motor vehicle inventory cards.	M-100-a	By 8-3-42		1	New Commercial Motor Vehicle Inventory Unit, War Production Board, 200 Varick St., New York City, N. Y.
PD-572	Report of change in inventory status of a new commercial motor vehicle.	M-100-a	When change occurs		1	Branch
PD-574	Report under general preference order M-19-a.	M-19-a	10th of month	Succeeding month	1	do
PD-575	Consumers' application for graphite crucibles.	M-61	20th of month	do	4	do
PD-578	Application for the release of new or used typewriters to Federal Government Agencies.		By 25th of mo.	Succeeding month	2	Procurement Division, Treasury Department
PD-581	Inventories, consumption, and requirements of cobalt.	M-39	20th of month	Succeeding month	2 with 4 of PD-582	do
PD-582	Application for, and allocation of, cobalt for metallic and nonmetallic uses.	M-39	On application	1 month	5	4 to branch with PD-581, 1 to supplier with purchase order
PD-582	Application for, and allocation of, cobalt for metallic and nonmetallic uses.	M-39	On application	do	5	do
PD-595	Request to purchase idle, frozen and excessive inventories of copper or copper base alloy products.		On request		1	War Production Board c/o Copper Recovery Corporation, 200 Madison Avenue, New York, N. Y.
PD-599	New railroad cars and new, rebuilt or converted industrial cars of the railroad type and cane cars authorizations and deliveries.	L-97-a, L-97-b	Monday	Preceding week	2	Branch
PD-600	Customer's application for deliveries of chemicals.	Various	See applicable order	Succeeding month	2	Branch
PD-601	Supplier's schedule of deliveries of chemicals.	Various	See applicable order	Succeeding month	2	Branch
★ PD-602 ★ PD-603	Authorization for receipt of magnesium.	M-2-b				
PD-606	Phthalate plasticizers: customer's application for delivery.	M-203	15th of month	Succeeding month	4	1 to supplier, 3 to branch
PD-607	Phthalate plasticizers: producer's and distributor's deliveries.	M-203	22d of month	Succeeding month	3	Branch
PD-609	Soluble nitrocellulose: customer's application for delivery.	M-196	15th of month	Succeeding month	3	Branch
PD-610	Soluble nitrocellulose: producer's and distributor's deliveries.	M-196	20th of month	Succeeding month	4	Branch
PD-611	Long ternes: Producer's report	M-21	12th of month	Preceding month	3	Branch
PD-612	Tin plate, short ternes, and black plate: Producer's report.	M-21	12th of month	Preceding month	3	Branch
PD-613	Long ternes: Purchaser's report	M-21		Preceding month	3	Branch
PD-614	Tin plate, short ternes, and black plate: Purchaser's report.	M-21	10th of month	Preceding month	3	Branch
PD-615	Critical heat exchangers: Authorization to place and accept an order.	L-172	On application		1	Branch
PD-616	Critical turbo-blowers: Authorization to place and accept an order.	L-163	On application		2	Branch
PD-616-b	Turbo-blowers: Manufacturer's report on production and delivery schedule.	L-163	25th of month	Succeeding month	4	Branch
PD-620	Application for determination of the use of laboratory equipment as necessary and appropriate in the public interest.	L-144	On application		3	Branch
PD-622	Office machinery: Manufacturer's report of billings for 1941.	L-54-c	By 8-30-42	1941	1	Branch

★ *Obsolete*

Description of E (Machine Tool) Orders

(For related forms, turn to page 132 of this Guide. Obsolete forms are marked by stars (*) in checklist beginning on page 132.)

Order No.	Subject	Purpose	Related forms	Issued	Effective	Expires	Branch	Administrator
E-1 Supplementary Order No. 1 Amendment No. 1 Extension No. 1	Machine tools Machine tools	Directs distribution Classifies in groups Changes urgency standings in Exhibit A		3-28-41 4-7-41 8-21-41 12-22-41	3-28-41 4-7-41 8-21-41 12-22-41	6-30-41 12-31-41 When revoked When revoked	Tools	L. R. Hawkins
E-1-a	Machine tools, gages and chucks	Production and delivery		1-6-42	1-10-42	When revoked	Tools	L. R. Hawkins
Amendment No. 1, revokes E-1-a Revised, supersedes E-1-a and Supplementary Order No. 1 to E-1.	Machine tools	Suspends effective date of E-1-a Contains revised master preference list. Brings chucks and gages under priorities control.		1-8-42 1-12-42	1-8-42 1-15-42	When revoked	Tools	
Amendment No. 2 E-1-b	Machine tools	Excludes "drill chucks" from control All new machine tools placed under limited allo- cation. Clarifies term "purchase order" as used in original order.	PD-529	3-26-42 4-30-42	3-26-42 5-1-42	When revoked	Tools	L. R. Hawkins
Interpretation No. 1		Clarifies use of AA ratings for service purchasers, whether or not they are listed on the Numerical Master Preference List.		5-15-42	5-15-42			
Interpretation No. 2		Clarifies delivery date determination with regard to ratings under Priorities Regulation No. 12		6-9-42	6-19-42			
Interpretation No. 3		Clarifies use of urgency standing in connection with a PD-1-A.		7-30-42				
Interpretation No. 4		Permits disposition of excess tools where Service Purchasers and Foreign and other purchasers do not absorb entire quotas.		8-10-42				
Amendment No. 1		Establishes quotas on cutting tools for various branches of services.		8-13-42	8-13-42			
Amendment No. 2		Raises any assigned rating covering machine tools to be purchased by Canadians as defined as "other purchasers" in order E-1-b to A-1-a.		9-9-42				
E-1-c	Machine tools for Canadian pur- chasers.	Directs use and distribution		6-19-42	6-19-42		Tools	L. R. Hawkins
E-2 Amended E-2-a Amended, revokes E-2, Amendment No. 1, and Exten- sion No. 1.	Cutting tools Cutting tools Cutting tools	Directs use and distribution do		7-17-41 7-23-41 8-28-41	7-17-42 7-17-41 8-28-41	11-30-41 11-30-41 11-30-41	Tools Tools Tools	L. R. Hawkins L. R. Hawkins L. R. Hawkins
Revocation E-2-b Supersedes E-2-a	Cutting tools Cutting tools	Adds more machines to list		11-29-41	11-29-41	2-28-41		
Amendment No. 1	Cutting tools	Revolves E-2-a Provides for scheduling of total monthly produc- tion; restricts sales and purchases to orders rated A-9 or higher, subject to specific exceptions; pro- vides for allocation of capacity in emergencies. Amends certification to include War Shipping Ad- ministration.		2-27-42	2-27-42	When revoked		
E-3 E-4	Machine tools Second hand machine tools	Covers allocation of tools for United Kingdom Allocates and directs distribution	PD-157	8-31-42 8-31-42				
E-5	Gages, precision measuring tools, testing instruments and chucks.	Revolves E-1-a revised. Sales and deliveries re- stricted to orders with A-10 or higher rating.		9-7-42				
E-6	Hand service tools	Limits the type of steel which may be used in pro- ducing such tools and also limits the orders which producers may fill.		1-12-42 2-3-42	1-12-42 2-3-42	7-1-42 When revoked	Tools Tools	L. R. Hawkins L. R. Hawkins
Amendment No. 1 E-7	Metal-cutting band saw blades and hacksaw blades.	Adds "industrial hand files" to exhibit A Restricts sale and purchase of metal-cutting band saw blades to orders rated A-9 or higher; restricts sale and purchase of hacksaw blades to rating of A-9 or higher, subject to certain exceptions.		6-15-42 6-12-42	6-15-42 6-12-42	When revoked When revoked	Tools Tools	L. R. Hawkins L. R. Hawkins
				6-26-42 8-31-42	6-26-42			

Description of L Orders (See checklist on Page 132 for live and obsolete PD forms)

Order No.	Subject	Purpose	Limitation Period		Related Forms	Effective	Expires	Branch	Administrator
			From	To					
L-1-a Supersedes L-1	Medium motor trucks or truck tractors or chassis, body or cab.	Restricts production	9- 1-41	11-30-41	PD-95	9-12-41		Automotive	J. E. Graham
Amendment No. 1	Truck trailers, semitrailers or full trailers or chassis or bodies.	Further restricts production				12- 4-41			
Interpretation No. 1	Passenger carriers, (motor or electric) or chassis or body.	Exempts sales to specified Government agencies.				12- 5-41			
Amendment No. 4	Medium motor trucks, passenger carriers.	1. Limits production to fabricated and semifabricated material on hand 2-28-42.				3- 2-42			
Amendment No. 6	Medium motor trucks, heavy motor trucks.	Permits certain production				4- 2-42			
L-1-e Amendment No. 1.	Medium motor truck, heavy motor truck vehicles under 16,000 pounds but not less than 9,000 pounds.	Permits manufacture during period 7-1-42 to 12-31-42 of off-the-highway vehicles as specifically authorized.				7-24-42			
L-1-g Amendment No. 1	Motor trucks, truck trailers and passenger carriers.	From 7-1-42, prohibits production except for war agency orders. Redefines "truck trailer" and causes it to apply to trailers for transportation of people.				7- 1-42 7- 4-42		Automotive	J. E. Graham
L-2	Passenger automobiles	Restricts production for manufacturers and makes of cars. Exempts direct sales to Government agencies. Rules that vehicles to fill designated Government contracts directly or indirectly are in addition to quotas.	8- 1-41	11-30-41		9-13-41	When revoked	Automotive	R. L. Vaniman
Interpretation No. 1		Restricts production during limitation period by setting maximum quotas for manufacturers and makes of cars.				12-23-41			
L-2-a	Passenger automobiles	Prohibits bright work except as authorized	12- 1-41	12-31-41		10-24-41	When revoked	Automotive	R. L. Vaniman
L-2-b Supplements L-2 Amendment No. 1	Passenger automobiles	Authorizes further exceptions for bright work.				12-15-41		Automotive	R. L. Vaniman
L-2-i		Restricts transfer of inventories of standard steel except to holders of A-3 rating and of alloy steel except to holders of A-1-k rating.				12-31-41		Automotive	R. L. Vaniman
L-3	Light motor trucks rated capacity; less than 1½ tons.	Restricts production	8- 1-41	11-30-41		3- 9-42		Automotive	R. L. Vaniman
Interpretation No. 1		Vehicles to fill designated Government contracts are in addition to maximum quotas.				9-13-41	When revoked	Automotive	R. L. Vaniman
Amendment No. 1	Light motor trucks	Defines "Light Motor Trucks"	12- 1-41	12-31-41		12-23-41		Automotive	R. L. Vaniman
Supplements L-3	Light motor trucks	Production for each producer limited				2-12-42 10-24-41		Automotive	R. L. Vaniman
Supplements L-3		1. Production for each producer limited 2. On and after 12-15-41 prohibits bright work.	1-11-42	1-31-42		11-14-41		Automotive	R. L. Vaniman
L-3-c Supplements L-3	Light motor trucks	1. Defines light motor trucks as 1942 model or any light trucks used less than 1,000 miles.				1- 1-42	When revoked	Automotive	R. L. Vaniman
Amendment No. 1		Authorizes transfers to 1. Designated Government agencies. 2. Holders of preference ratings of A-1-j or higher.				1- 8-42		Automotive	R. L. Vaniman

Under 1,000 times.

Authorizes transfers to
1. Designated Government agencies.
2. Holders of preference ratings of A-1-j
or higher.

Amendment No. 1

1- 8-42

L-3-f Supplements L-3 L-5	Light motor trucks Domestic mechanical refrigerators.	Stops production 2-1-42 1. Production restricted during limitation period. 2. Regulates inventories of materials, parts and refrigerators. Product defined as for household use having net capacity of 16 cubic feet or less. Refrigerators for use on vessels of U. S. Navy or Maritime Commission exempt from L-5. Refrigerators for frozen foods or quick freezing exempt from L-5. Curtails production during limitation period. Prohibits production from cut-off date. Changes date for filing of reports to on or before 7-3-42. Further regulates transfer of materials and parts. Permits limited production of kerosene refrigerators after 4-30-42. 1. From effective date stops transfers subject to designated exceptions. 2. Establishes procedure covering application for permission to purchase and issuance of certificates of transfer on Forms PD-428 and PD-430. 3-16-42 3-16-42	8- 1-41 12-31-41	PD-125, PD-417	1-21-42 9-30-41 3- 3-42 4-20-42 4-25-42 2-23-42 6-15-42 3-27-42 3-28-42 6-15-42 When revoked 3-28-42	Automotive Consumers' Durable Goods	R. L. Vaniman L. M. Morrison
Amendment No. 1 Interpretation No. 1							
Amendment No. 2							
L-5-c Supplements L-5, L-5-a, L-5-b Amendment No. 1	Domestic mechanical refrigerators.		2-14-42	4-30-42		Consumers' Durable Goods	L. M. Morrison
Amendment No. 2							
Amendment No. 3							
L-5-d Supersedes L-5-b	Domestic mechanical refrigerators.				PD-427, PD-430, PD-432	Consumers' Durable Goods	L. M. Morrison
L-6-c Supersedes L-6	Domestic laundry equipment, washing and ironing machines.		3-16-42 3-16-42	4-15-42 5-15-42		Services	V. E. Berl
L-7	Domestic ice refrigerators		9- 1-41	12-31-41	PD-176, PD-177, PD-417	Consumers' Durable Goods	L. M. Morrison
L-7-a Supplements L-7	Domestic ice refrigerators		1- 1-42	3-31-42	PD-176, PD-177	Consumers' Durable Goods	L. M. Morrison
L-7-a Amendment No. 1			1- 1-42	3-31-42			
L-7-b Supplements L-7	Domestic ice refrigerators		4- 1-42	6-30-42			
L-13	Metal office furniture and equipment.		9- 1-41	12-31-41	PD-134, PD-136	Consumers' Durable Furniture	L. M. Morrison L. J. Conger
Amendment No. 1							
L-13-a Supplements L-13	Metal office furniture and equipment.				PD-423, PD-465, PD-500	Furniture	L. J. Conger
Amended					PD-423, PD-500		
L-18	Domestic vacuum cleaners		10- 1-41	12-31-41	PD-170, PD-171, PD-417	Consumers' Durable Goods	Robert Beatty
L-18-a Supplements L-18	Domestic vacuum cleaners		1- 1-42	3-31-42	PD-170	Consumers' Durable Goods	Robert Beatty
L-18-b Supplement L-18 and L-18-a	Automatic phonographs, weighing machines, and gaming machines.		4- 1-42	4-30-42		Consumers' Durable Goods	Robert Beatty
L-21	Automatic phonographs, weighing machines, and gaming machines.		12- 1-41 1- 1-42	12-31-41 1-31-42	PD-182, PD-417	Consumers' Durable Goods	A. Bisgood
L-21-a Supplements L-21			3- 1-42	4-30-42		Consumers' Durable Goods	A. Bisgood
Amendment No. 1							

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Order No.	Subject	Purpose	Limitation Period		Related Forms	Effective	Expires	Branch	Administrator
			From	To					
Amendment No. 2 L-22	Furnaces, direct-fired, central plant warm air unit for heating interior of building.	Extends restrictions to manufacturers of parts. 1. Limits consumption of iron and or steel during limitation period. 2. Forbids accumulation of excessive inventories of material. Replacement parts may be manufactured over and above quotas established by order L-22.	1- 1-42	12-31-42		6- 4-42 4-11-42	When revoked	Plumbing and Heating	M. N. Johnston
Interpretation No. 1 L-23-c	Domestic cooking appliances	1. After cut-off date: a. Restricts types to be made. b. Stops production by classes A and B manufacturers. c. Restricts use of iron and steel. d. Restricts each manufacturer to one permitted model, etc. Codifies order L-26 incorporating all schedules and amendments. Permits grouping of attachments and repair parts quotas. From cut-off date stops production of farm tractors requiring rubber tires. 1. Prohibits production of any farm machinery and equipment requiring rubber tires except combines (Harvester threshers) after 4-30-42. 2. Prohibits production of combines requiring rubber tires from 7-31-42. Regulates transfer of surplus inventory of iron and steel.	1- 1-42	7-31-42	PD-192, PD-192-a, PD-493, PD-494	5-15-42		Plumbing and Heating	J. E. Parrish
L-26 As amended 7-14-42 Amendment No. 1	Farm machinery, equipment attachments, repair parts.					7-14-42			
L-26-a Supplements L-26 Amendment No. 1	Farm machinery		3- 1-42	4-30-42		8- 6-42 3- 9-42 4-20-42		Farm Machinery	W. R. Tracy
L-26-b Superseded by Prior. Reg. 13	Farm machinery				PD-478, PD-479	5-15-42		Farm Machinery	W. R. Tracy
L-26-c Supplements L-26 amended	Farm machinery					6-15-42		Farm Machinery	W. R. Tracy
L-26-d Supplements L-26 amended	Farm machinery, equipment, attachments and repair parts.	1. Furnishes additional definitions. 2. Limits manufacture and acceptance for resale of copper products and copper base alloy products with specified exceptions used in farm machinery. 1. Further defines "Farm Machinery and Equipment" and "Attachments." 2. Prohibits sale of these items which will not be used for production or care of crops, livestock, or other produce except on orders with A-9 or higher. 1. Restricts during limitation period and thereafter use in production of iron and steel, alnico magnets designated prohibited and other metals. 2. From cut-off date stops use of prohibited metals in production. 1. Stops production from cut-off date 2. Permits continuance of production of machines used to vend sanitary napkins with restricted use of materials. 3. Stops use of all prohibited metals or alnico magnets after 4-30-42. 4. Permits continuance of production of repair and replacement parts. Reduces types to be made after Nov. 1			PD-284	6- 8-42		Farm Machinery	W. R. Tracy
L-27	Vending machines except U. S. postage stamp machines or automatic restaurants.		1- 1-42	2-28-42	PD-117	12-31-41		Consumers' Durable Goods	A. Bisgood
L-27-a Supplements L-27	Vending machine					3-17-42		Consumers' Durable Goods	A. Bisgood
L-28-a L-29	Incandescent, fluorescent lamps. Metal signs		3-25-42	6-30-42		3-25-42	When revoked	Consumers' Durable Goods	W. W. McCord

L-29	lamps. Metal signs	Restricts use of iron and steel in production and installation of signs or accessories during limitation period. From	3-25-42	6-30-42	3-25-42	When revoked	Consumers' Durable Goods	W. W. McCord
Amendment No. 1		cut-off date stops any metal in signs or accessories. Subject to specified exceptions stops transfer of inventory of iron or steel from 3-25-42.						W. S. Hammersley
Amendment No. 2		Further defines "Signs" and types of lighting units.						
L-30	Kitchen, household and other miscellaneous articles.	1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.	6-2-42					
Amendment No. 2		1. Restricts use of zinc in production 2. Stops use of specified scarce materials 1. Amends list of Group III products 2. Permits use of iron or steel joining hardware if not over 5% by weight of finished product.	7-15-42					
Amendment No. 3	Kitchen, household and other miscellaneous articles.	1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
Amendment No. 6		1. Restricts use of zinc in production 2. Stops use of specified scarce materials 1. Amends list of Group III products 2. Permits use of iron or steel joining hardware if not over 5% by weight of finished product.						
Amendment No. 7		1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
Amendment		1. Restricts use of zinc in production 2. Stops use of specified scarce materials 1. Amends list of Group III products 2. Permits use of iron or steel joining hardware if not over 5% by weight of finished product.						
L-32	Metallic license plates composed of ferrous or nonferrous metal.	1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
L-33	Portable electric lamps and shades.	1. Restricts use of zinc in production 2. Stops use of specified scarce materials 1. Amends list of Group III products 2. Permits use of iron or steel joining hardware if not over 5% by weight of finished product.						
L-35	Replacement parts for medium motor trucks, tractors or chassis, heavy motor trucks or chassis, trailers.	1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
Amendment No. 1		1. Restricts use of zinc in production 2. Stops use of specified scarce materials 1. Amends list of Group III products 2. Permits use of iron or steel joining hardware if not over 5% by weight of finished product.						
Revocation		1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
L-37-a	Musical instruments	1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
Supersedes L-37		1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
Amendment No. 1		1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
L-38	Industrial and commercial refrigeration and air-conditioning machinery and equipment.	1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
L-39	Fire protective equipment	1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						
As amended 7-11-42		1. Permits sale of frozen inventories of iron or steel to war and other government agencies under Priorities Regulation No. 13. 2. Rescinds requirement for reporting inventories of metal.						

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Order No.	Subject	Purpose	Limitation Period		Related Forms	Effective	Expires	Branch	Administrator
			From	To					
L-41	Construction	Prohibits starting of all construction subject to designated exceptions.			PD-3-a, PD-105, PD-200, PD-200-a, PD-285, PD-406	4-9-42	When revoked	Construction Bureau	Esty Foster N. Y. office
Amended		Revises Schedule A listing preference rating orders.				5-16-42			
Amendment No. 2		Liberalizes restrictions on construction of several specified types.				7-23-42			
L-41-a	Construction	From 14 days after effective date stops construction for amusement as defined.				5-23-42		Construction Bureau	Esty Foster New York office
Supplements L-41	Construction	Amends restrictions of L-41 so that construction of fuel plants to other than oil is not affected.				7-15-42		Construction Bureau	Esty Foster New York office
L-42	Plumbing and heating simplification.	Announces that schedules of simplification of lines designed to conserve critical materials and productive facilities may be issued from time to time.				2-11-42		Plumbing and Heating	F. A. Weiskittel
Schedule I	Iron body and brass or bronze valves.	Establishes steam pressure ratings for sizes shown in schedule.				3- 1-42			J. B. Hungate
Schedule No. I Amendment No. 1		Exempts iron body, brass or bronze valves for equipment of vessels other than pleasure craft or of aircraft.				5-16-42			
Schedule II	Gray cast iron, malleable iron, brass and bronze pipe fittings.	Limits future production to sizes and types set forth in appendix to schedule.				3- 1-42			
Amendment No. 1		Lists further exceptions.				4- 4-42			F. A. Weiskittel
Amendment No. 2		Exempts pipe fittings of gray cast iron, malleable iron, brass and bronze for equipment of vessels.				5-16-42			J. B. Hungate
Amendment No. 3	Low pressure heating boilers	Includes specified fittings in permitted list				8-15-42			H. S. Norris
Schedule III		Orders elimination from boilers of metal jackets, fusible plugs, and tricocks after 6-1-42.				6- 1-42			
Schedule IV	Cast-iron soil pipe and fittings	Stops production and transfer of any pipe and fittings not conforming to standards in the schedule.				4- 1-42			J. B. Hungate
Schedule IV, amended, supersedes Schedule IV		Revises standards of pipe and fittings				6- 1-42			
Schedule V	Plumbing fixture fittings and trim.	Restricts use of metal in production subject to exceptions as specified.				4- 1-42			C. M. Wilcox
Schedule V, Amendment No. 1	Plumbing and heating	Except for articles already in production, stops use of chromium, nickel, copper, or cadmium as finish.				5- 6-42			
Schedule V-a, Supplements Schedule V		Prohibits use of copper or copper base alloy in designated articles.				6-15-42			
Schedule VI	Cast iron tubular radiators	Restricts production and transfer subject to specified exceptions to radiators of types and specified designs.				4-16-42			H. S. Norris
Schedule VII	Hot-water heaters and piping systems.	Prohibits use of copper or copper base alloy in production.				4- 1-42			H. S. Norris
Schedule VII, Amendment No. 1		Requires permission of Director of Industry Operations for restricted use of copper or copper base alloy in production.				5- 6-42			
L-42	Vapor and vacuum heating specialties. Direct fired gas storage water heaters.	Restricts production				4-25-42	6-15-42	Plumbing and Heating	W. F. Bilyeu
Schedule VIII		1. Restricts production and transfer				5-15-42			H. M. Brundage

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			From—	To—					
L-53-b	Track-laying tractors and auxiliary equipment.	Prohibits 7-1-42 to 6-30-43 manufacture of repair parts.	3-15-42	6-30-42	PD-365, PD-366	7-1-42	When revoked	Construction Machinery Services	J. W. Mohler
L-54-a	Typewriters: new and used	Restricts production of typewriters as defined during limitation period and after. Regulates transfer of new and used typewriters and parts.	3-15-42	6-30-42	PD-365, PD-366	3-17-42	When revoked		R. Devoy
Amendment No. 1		Establishes maximum production quotas of parts for export.	3-15-42	6-30-42	PD-365, PD-366	3-27-42			
Amended		1. From 11-1-42, stops production of non-portable typewriters and regulates distribution. From 8-1-42, stops production of portables.				8-4-42			
		2. Assigns production quotas for period 7-1-42 to 10-31-42 for non-portable machines, and for period 7-1-42 to 7-31-42 for portables.							
L-54-c	Office machinery	1. Limits manufacture of specified machines (list A) during period 6-1-42 to 11-30-42, and from 12-1-42 prohibits their manufacture.			PD-423	6-1-42		Services	P. C. Gaetner
Amendment No. 1		2. Limits manufacture of other products (list B) during period 6-1-42 to 12-31-42.			PD-1A, PD-3, PD-3A, PD-423, PD-566	7-16-42			
L-55	Shotguns	Permits limited production of special machines.			PD-398	2-23-42		Governmental Requirements Building Materials	William Blanchet
L-59	Metal plastering bases and accessories.	Stops production and transfer subject to designated exceptions.	3-1-42	6-30-42		3-25-42	When revoked		S. Wirgman
Amendment No. 2		Restricts use of any metal in production during limitation period subject to designated exceptions.				7-11-42			
		1. From 7-1-42 to 10-31-42 prohibits manufacture in excess of 1/6 of 10 per cent of metal used during years 1940 and 1941. Holds companies using more than 14,000 tons of metal in 1941 to restrictions.							
L-60	Pistols, rifles, and shotguns	Until 6-1-42, prohibits others than manufacturers from transferring new pistols, shotguns or rifles subject to designated exceptions.			PD-382, PD-383, PD-398	2-27-42		Governmental Requirements	M. Maverick
Amendment No. 1		From issuance date prohibits transfers by others than manufacturers subject to designated exceptions.				5-26-42			
L-62	Metal household furniture	Restricts use of iron and steel	3-20-42	3-31-42	PD-465	3-20-42		Furniture	L. J. Conger
Amendment No. 2		1. Adds parts to products covered				5-14-42			
		2. Freezes inventories of iron and steel on 6-30-42 instead of 5-31-42.							
		3. Changes production cut-off date to 6-30-42.							
L-63	Suppliers' inventory limitation	Restricts inventories of 19 classes of supplies held by wholesalers, jobbers, dealers, retailers, or branch warehouses.			PD1-X, PD-336	4-6-42	When revoked	Distributors	L. C. White
Exemption No. 1		Exempts from restrictions of the order "warehouses" as defined in M-21-b.				4-17-42	When revoked		
Amendment No. 1		Removes "Health Supplies"				4-27-42			
Exemption No. 2		Exempts cutting tools from provisions of order except as far as records on PD-336 are concerned.				5-1-42			

Exempts cutting tools from provisions of order except as far as records on PD-336 are concerned.

Exemption No. 4	Exempts supplies made of, aluminum acquired by allocation or by authorization. Restricts and regulates size of inventories.	5- 4-42	When revoked	
Amendment No. 2		5- 5-42		
Exemption No. 3	Makes it unnecessary to include tires, tubes, etc., in report.	5-12-42	When revoked	
L-63	Exempts certain classes of items from provisions of the order.	5-15-42		
Interpretation No. 1	Establishes optional procedure whereby supplier may calculate maximum permissible inventory.	5-23-42		
Amendment No. 3	Amends subparagraph (1) of Paragraph (a) by striking "Railroad Supplies."	6-15-42		
Amendment No. 4	Exempts specified materials	5-23-42		
Exemption No. 5	Exempts functional replacements, machinery purchased in excess of \$500 per unit and any material rationed.	7-22-42		
Exemption No. 6	Exempts suppliers located outside U. S. Consolidates, without other change, original order and four amendments and seven exemptions issued.	7-16-42		
Exemption No. 7	Amended	8-13-42		
L-64	Caskets, burial vaults	7-27-42		
Amendment No. 1				
As amended Sept. 24				
L-65	Electrical appliances as designated in Schedule A.	PD-370, PD-417	When revoked	Consumers' Durable Goods R. Beatty
Amendment No. 1		3-30-42		
Amendment No. 1		4- 9-42		
L-67	Lawn mowers	3-30-42		Consumers' Durable Goods L. M. Morrison
Amendment No. 1		5-22-42		
L-68	Closures and associated items	3-28-42		Textile Clothing and Leather G. E. Piper
Amendment No. 1		5-28-42		Textile, Clothing and Leather G. E. Piper

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Order No.	Subject	Purpose	Limitation Period		Related Forms	Effective	Expires	Branch	Administrator
			From—	To—					
L-69	Motor vehicles	1. Stops use of bright work subject to designated exceptions. 2. Regulates disposition of inventory of designated metals.				3-14-42		Automotive	J. J. Donovan
L-71	Flashlight cases and batteries.	1. After 3-31-42 stops use of specified materials in production subject to designated exceptions. 2. After 5-31-42 restricts use of iron or steel in production. 3. After 3-27-42 restricts use of all materials in production.			PD-417	3-27-42	When revoked	Consumers' Durable Goods	R. Beatty
L-71 Amendment No. 1		1. Excepts from restrictions plated steel in inventory on or before 3-31-42. 2. Excepts from restrictions fabricated or processed steel or iron in inventory prior to 4-1-42.				6- 5-42			
L-72	Razors and razor blades	1. During limitation period restricts production. 2. To 5-24-42 restricts use of copper in safety razors. 3. From 5-25-42 stops use of copper in safety razors except for plating. Limits production of safety and straight razors and razor blades. 1. From 8-1-42 to 9-30-42 limits production of razors and razor blades. 2. Extends order.	3-25-42	6-24-42	PD-417	3-25-42	When revoked	Consumers' Durable Goods	S. Ford
Amendment No. 1						6-25-42			
Amendment No. 2			6-23-42	7-31-42		8- 4-42			
L-73	Office supplies.	1. Restricts use of iron and steel in production. 2. Stops use of designated prohibited materials except zinc for galvanizing as restricted and except as specified. 3. Restricts production to defined Federal specifications.			PD-417	3-28-42	When revoked	Consumers' Durable Goods	J. French III
L-74	Oil burners	1. Restricts production of Class A burners 2. During limitation period restricts production of Class B burners. 3. After cut-off date stops production of Class B burners.	4- 1-42	5-31-42		4-15-42	When revoked	Plumbing and Heating	R. H. Housel
L-75	Coal stokers	1. Restricts production of Class A stokers 2. During limitation period restricts production of Class B stokers. 3. After cut-off date stops production of Class B stokers.	4- 1-42	5-31-42		4-15-42	When revoked	Plumbing and Heating	R. H. Housel
Amendment No. 1		Permits assembly from 5/31/42 to 9/30/42, of parts completely fabricated on 5/31/42. Prohibits manufacture of any of the types of tubes enumerated in "List A."				6- 4-42			
L-76	Radio tubes					4-24-42		Communications	L. H. Peebles
L-77	Metal windows	1. Permits manufacture only for orders with A-2 or higher rating, or for windows already begun. 2. Prohibits deliveries of material for manufacture except pursuant to an order with a rating assigned under PRP. 3. Prohibits transfer except on orders with A-10 or higher rating. Subject to specified exceptions: 1. Prohibits production after cut-off date. 2. Prohibits transfers.				3-25-42	When revoked	Building Materials	S. Wirgman
Amendment No. 1						4-28-42			

Subject to specified exceptions:
1. Prohibits production after cut-off date.
2. Prohibits transfers.

Amendment No. 1

4-28-42

L-79	Plumbing and heating equipment.	Stops transfers subject to designated exceptions.	PD-423	4-16-42	When revoked	Plumbing and Heating Consumers' Durable Goods	L. S. Knappen
L-80	Outboard motors and parts	1. Stops production except to fill preferred orders as designated. 2. From 4-1-42 restricts production of repair and replacement parts.	PD-417	3-27-42			L. M. Morrison
L-81	Toys and games	Until 6-30-42 restricts use of critical material as specified. After 6-30-42 stops processing of critical materials for production of Class A products. After 6-30-42 stops use of materials listed in amendment in any form, and removes these materials from list of prohibited material in the order. Restricts sales and production with certain exceptions.	PD-417	4-1-42		Consumers' Durable Goods	W. W. McCord
Amendment No. 1				4-6-42			
L-82	Construction equipment: Power cranes and power shovels.	Prohibits transfer and production of rubber-tired equipment subject to specified exceptions.	PD-445, PD-446, PD-448.	5-2-42		Construction Machinery	M. B. Garber
L-82-a	Construction equipment	1. Stops production and transfer subject to specified exceptions. 2. Restricts transfer of parts for maintenance and repair.	PD-445, PD-446, PD-448	5-2-42		Construction Machinery	M. B. Garber
L-83	Industrial machinery	Until 5-15-42 permits production of critical industrial machinery to fill approved orders.		4-9-42	When revoked	Appeals	A. E. Collins
Amendment No. 1				4-20-42			
Amended 5-18-4		1. Restricts transitions to "approved orders" with specified exceptions. 2. Establishes procedure for authorization of orders on books. 3. Regulates auction sales, court order sales, and similar transactions. 4. Does not apply to repair or maintenance orders of less than \$1,000.		5-18-42	When revoked		
Amendment No. 3		Permits application of PRP					
L-88	Used rail and used rail joints	Places disposition under control of Director of Industry Operations.	PD-447	8-27-42 4-22-42	When revoked	Transportation Equipment	F. B. Robbins
Amendment No. 1		1. Does not include high T rails from street car tracks. 2. Permits transfer of ten tons of used rail per month.		5-18-42			
L-89	Elevators	1. Prohibits acceptance of any restricted orders or start of manufacture except as authorized by the Director of Industry Operations. 2. Restricts use of nonferrous metals, stainless or alloy steel.	PD-411, PD-562	7-9-42		General Industrial Equipment	R. W. Charles
L-97	Railroad equipment: Locomotives.	Puts production schedules under control.		4-4-42 4-29-42	When revoked	Transportation Equipment	E. C. Hanly
Amendment No. 1		Restrictions do not apply to locomotives used in underground mines, or locomotives of less than 20 tons used in mining. Puts production schedules under control.					
L-97-a	Railroad equipment: Railroad cars.	1. Stops acceptance of material carrying rating of A-2 or lower.		4-4-42	When revoked	Transportation Equipment	E. C. Hanly
L-97-a-1	Railroad equipment	2. Permits transfer of material to another producer or railroad obtained on preference rating for repair or construction.		4-29-42		Transportation Equipment	D. W. Odiorne
Supplements L-97-a							
Amendment No. 1		1. Cancels as of 4-29-42 ratings of A-2 or lower assigned prior to that date. 2. Permits transfer among producers, suppliers, and railroads of car parts.		5-13-42			
Amendment No. 2		Permits transfer of car parts to be used in construction of repair of cars.		5-28-42			

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			From—	To—					
L-97-b	Railroad equipment	Establishes control of production and distribution, industrial cars, railroad type. Restricts production etc.	4-25-42	6-15-42	PD-417	8- 8-42	When revoked	Transportation	D. W. Odiome
L-98	Domestic sewing machines	Limited amount of iron and steel and non-ferrous metals to be used in manufacture of repair parts during the period 5-1-42 to 12-31-42.				4-25-42	When revoked	Consumers' Durable Goods	Robert Beatty
Amendment No. 1		Puts placing and acceptance of orders for critical compressors under control. From effective date puts production schedules and transfers under control. Stops transactions in equipment or boilers exceeding \$1,000 per unit in actual or market value without approval.			PD-415, PD-416, PD-420 PD-530, PD-530a	4-17-42	When revoked	General Industrial Equipment	J. J. Thompson
L-100	Compressors	1. Restricts production.				5-21-42	When revoked	Transportation	E. S. Pardoe
L-101	Passenger carriers	2. Limits material for production to low carbon steel wire.				4-11-42		Equipment	A. E. Shaw
L-102	Used electric generating equipment and used steam boilers.	Extends restrictions on production to 9-15-42.						Power	
L-104	Metal hair pins and metal bob pins.	Cuts production to 25 per cent of 1941	4-25-42	7-24-42		4-25-42		Consumers' Durable Goods	J. French, III
Amendment No. 1		Stops the use of copper in production of automotive parts other than as specified. Delivery prohibited except on U. S. Government orders or as authorized on Form PD-412-a.				8- 8-42			
As amended Sept. 25.	Copper	After 4-30-42 restricts painting equipment and parts or assemblies except by ultimate purchasers.				5- 6-42		Automotive	J. J. Donovan
L-106	Extended-surface heating equipment.	Restricts production for and transfers to holders of A-1-j rating or higher. Establishes criteria for issuance of preference rating certificates. Restricts and regulates delivery.			PD-312-a, PD-412-412-a, PD-467	6-13-42		Plumbing and Heating	W. F. Bilyen
L-107	Finishes on metal working equipment.	1. Prohibits delivery of industrial power trucks except on orders rated A-9 or higher, or delivery of truck orders placed before 7-10-42 except those bearing A-1-k or higher rating.				4-27-42		Tools	L. R. Hawkins
L-108	Electroplating and anodizing equipment.	2. Prohibits manufacture after 7-10-42 of other than standard models. Sets complete allocation control, including control over production.				5-11-42	When revoked	Consumers' Durable Goods	W. W. McCord
L-110	Hand trucks.	Limits manufacturers and approved models. 1. Prohibits production or transfer except to fill an approved order.			PD-468	5- 7-42	When revoked	General Industrial Equipment	D. G. Darling
L-111	Industrial power trucks	2. Production schedules and list of all unfilled orders to be filed 6-1-42. Defines equipment as listed in Schedule A. Effects changes in Preference Rating requirements.			PD-1A, PD-3A, PD-385	7-10-42		General Industrial Equipment	D. G. Darling
Amendment No. 1		Prohibits acceptance of order or delivery in fulfillment of order, unless order is approved order as defined.			PD-556				
L-112-a	Industrial power trucks.	Preference rating raised to A-1-c or higher. Prohibits related machinery from production except as authorized.				8-14-42		Gen Ind Equip	D. G. Darling
L-117	Heavy power and steam equipment as listed in Schedule A.	1. Issues specifications on self-contained drinking water coolers. 2. Restricts				5-18-42		Power	W. L. Cisler
Amendment No. 1						5-25-42			
Amendment No. 2						6- 8-42			
L-123	General industrial equipment					5-26-42		General Industrial Equipment	Richard C. Brown
Amendment No. 1						8-27-42		Commercial Refrigeration and Air Conditioning.	G. W. Uderitz
L-126	Industrial and commercial refrigeration and air conditioning machinery and equipment.					7- 3-42			
Schedule No. 1						7- 3-42			

Schedule No. 3	L-128	Chromium and nickel in auto- motive valves.	drinking water coolers. 2. Restricts specified materials. Limits materials used in coil or tube assemblies. 1. Limits use of chromium and nickel to specified percentages. 2. Prohibits manufacture of any but two- piece welded head type. Provisions apply to 28 parts as enumerated when made from nickel, chromium, or any alloy thereof. 1. Limits quantity of iron, steel and other metals used for cutlery. 2. Prohibits accumulation of inventories beyond specified amount. Halts production, except for specified fire doors. 1. Prohibits sale or rent unless under certification. Armed forces exempted 1. From 6-10-42 prohibits manufacture of specified sizes except by "Author- ized Producers" as defined. 2. Permits delivery of bearings completed on 6-10-42. 3. Requires manufacturers to retain tools 1. Qualifies "completed bearings" to include wholly or partially completed. 2. Indicates changes in producers in exhibit A.	9- 2-42	Automotive	J. J. Donovan
	L-134	Instruments, valves and regu- lators used in industrial proc- esses.		7- 1-42	General Indus- trial Equipment	C. L. Saunders
	L-140	Cutlery		5-30-42	Consumers' Du- rable Goods	W. W. McCord
Amendment	L-142	Metal doors		6-12-42	Safety and Tech- nical Equipment	Dr. E. R. Shaeffer
	L-144	Laboratory equipment		8-29-42	Tools	H. C. Bauer
	L-145	Aircraft control and pulley- bearings.		6-10-42		
Amendment No. 1	L-146	Welding rods and electrodes		7- 7-42		
Amendment No. 1			PD-528	6-13-42	General Indus- trial Equipment	G. W. McCormick Jr. A. C. Eaton
				6-30-42		
				7-10-42	Tools	L. R. Hawkins
Amendment No. 1	L-147	Machine tools electrical speci- fications.	1. Prohibits special electrical specifica- tions for machine tools except in specified circumstances. 2. Requires purchasers to avoid special electrical specifications from 7-15-42. Prohibits makers from accepting orders lower than A-7. Completion of certain equipment projects permitted. Prohibits production of power, steam, and water auxiliary equipment except in ac- cordance with schedules issued by WPB. Prohibits production of water meters con- taining copper or copper base alloys, stainless steel or nickel alloys, or tin in coatings. Excepts production for war agencies Restricts use of materials in steam surface condensers. Prohibits manufacture except in accord- ance with specifications in schedules to be issued by the WPB.	9- 8-42		
	L-148	Telephone and telegraph equip- ment.		6-17-42	Power	J. C. Crenshaw
	L-154	Power, steam and water auxil- iary equipment.		6-17-42	do	J. C. Crenshaw
Schedule 1		Water meters		7-24-42 8-14-42		
Amendment No. 1 Schedule 2				7-20-42	Building ma- terials	F. H. Jones
L-157		Hand tools simplification				

THE IRON AGE PRIORITIES GUIDE

Order No.	Subject	Purpose	Limitation Period		Related Forms	Effective	Expires	Branch	Administrator
			From—	To—					
Schedule No. 1	Hand tools simplification	Establishes sizes, types, grades, finishes, lifts, gauges, and handles for the manufacture of hand shovels, spades, etc. Reduces varieties, fixes sizes, etc., effective Nov. 3.				9- 1-42			
Schedule No. 4	Material entering into production of replacement parts for motor vehicles.	1. Categories vehicles and specifies parts permitted to be manufactured. 2. Forbids use of critical materials or those prohibited by "M" orders. 3. Limits parts which may be manufactured and limits amounts thereof for each category of vehicle. 4. From 7-15-42 requires consumer to turn in similar used part for each replacement purchased. 5. Restricts distributors' inventories from 8-15-42. Revokes L-4, L-4-c, and L-35. Permits scheduling of production of replacement parts to be planned without regard to contracts for other material with ratings lower than A-1-A. Permits parts sale under specified conditions. Makers may schedule as if orders had AA-2-x rating.			<i>Forms recently declared obsolete are starred in checklist on page 132.</i>	11- 3-42 7- 4-42		Automotive	J. J. Donovan
Amendment No. 1						9- 1-42			
Amendment No. 2	Plastics molding machinery	1. Prohibits delivery of plastics molding machinery except on approved orders. 2. Rules that an approved order ceases to be such if not delivered within 30 days of issuance of this order. 3. Prohibits delivery of repair and maintenance parts except as specified. Limits use of copper to current-carrying parts. Restricts placing of orders and delivery except as specifically authorized by WPB. Limits raw material purchases as of Sept. 24; halts production after Oct. 19. Prohibits placing or accepting orders for heat exchangers except as specified. Stops production of oil space heating equipment except for war agencies. Restricts transfers of new railroad standard watches. 1. Standardizes loose-leaf metal parts 2. Removes restrictions of M-126.			PD-1-a, PD-3-a, PD-200-a, PD-554	7- 4-42		Chemicals	J. A. Lawson
L-161	Parts for fuses					8-24-42			
L-163	Turbo-blowers				PD-616, PD-616-a, PD-616-b	8- 7-42		General Industrial Equipment	G. W. McCormick, Jr.
L-165	Armored Cable								
L-172	Heat exchangers				PD-615, PD-615-a, PD-615-b	8- 5-42		General Industrial Equipment Plumbing and Heating Consumers' Durable Goods Printing and Publishing	G. W. McCormick, Jr. Lynn Eaton Robert Beatty
L-173	Oil and gas burning domestic space heaters					8- 5-42			
L-175	Railroad standard watches					8- 7-42			
L-188	Loose-leaf metal parts and units.				PD-500	8- 3-42			S. H. Harrington W. M. Passano
L-176	Fans	Prohibits transfer of fans already made or being made, without approval. Limits capacity, production and inventories of replacement batteries. Prohibits use of chromium, nickel or alloy except as specified; excepts export items; provides specifications, sets preference ratings, etc.				9- 7-42		Automotive	I. C. White
L-180	Materials used in making storage batteries.					8-29-42			
L-184	Industrial instruments					9- 9-42		General Industrial Equipment	A. Cunningham
Amended									
L-196	Used construction equipment	Requires registration of equipment, etc.				8-31-42		Construction Machinery	F. Smith
L-197	Steel Shipping Drums	Restricts uses, sales, and deliveries. Lettering provisions Oct. 1							
Amendment No. 1									

(CONTINUED FROM PAGE 102)

the 5 copies is as follows: One copy passes to the Issuance Unit and is returned to the applicant as his PRP certificate on which are stated the authorized quantities of materials which he is permitted to purchase during the quarter together with preference ratings assigned. A second copy is retained in the signature file. Two copies are returned to the processing Branch and the fifth copy goes back to the Bureau of the Census where it is available for the tabulation of authorizations by product groups.

When the PD-25A schedules are received by the Census Bureau from the WPB they are sorted into a number of groups. The most important sortings are (a) that by size of schedule and (b) that for rejections from the tabulations.

In order to give preferred treatment to the larger applications which have the greatest influence upon the tabulations, schedules with shipments in either the second or fourth quarter in excess of \$500,000 are placed in group I. The next group includes schedules with shipments of from \$50,000 to \$500,000. Group III includes companies with shipments under \$50,000.

In view of the fact that it would be impossible to include in the tabulations within the time available all PD-25A schedules received, smaller companies whose metal consumption is meagre are sorted and marked for exclusion from the processing which takes place in the bureau. Each of the smaller schedules is examined to determine metal consumption. If a company reports neither 30 tons of items 100 to 189 nor 10,000 pounds of items 190 to 384 its schedule is marked "reject." This means it will not be coded and will not appear in the tabulations. The reason for such treatment of small schedules is simple. It would be impossible to meet a tight time schedule and to include the thousands of small applications which flow to the WPB. It is estimated on the basis of the PD-275 tabulations that the dollar value of metal consumption of all companies including the thousands of small companies that are not required to file PR-25A, not meeting the above standards amount to no more than 5 per cent of the metal

consumption of all companies meeting the standards. The inclusion of all schedules which are actually received but rejected because of size would add less than one-half of one per cent to the total value of materials of those schedules tabulated.

It may be important to note at this point that 1,000 of the largest plants in the United States account for over 70 per cent of the total dollar value of metal consumption of American manufacturers. Only 137 of the largest companies (comprising 420 plants) in the United States consume approximately 50 per cent of all metal used in manufacturing. In terms of the Census work these figures mean that if 14,000 or 15,000 of the largest schedules are tabulated the final data will account for from 90 to 95 per cent of American metal consumption. To get the other 5 per cent the Census would have to assume the burden of tabulating many more thousands of schedules. The effort is by no means worth the results for in "cutting the pie" a small "kitty," which can be estimated relatively accurately, can be set aside to provide for the needs of companies not included in the tabulations.

New Order Covers Gas Cylinder Output, Deliveries

Washington

• • • Control over production and distribution of gas cylinders was ordered Sept. 30 by WPB with issuance of General Preference Order M-233. The order provides that between now and Jan. 1, production and delivery of the cylinders and cylinder forgings will be subject to such directions as may be issued by the WPB Director General for Operations.

After Jan. 1, production and delivery of the cylinders will be permitted only as specifically directed by WPB. If necessary, in granting authorizations, WPB will ignore ratings assigned to particular contracts or purchase orders in order to meet the requirements of the war program.

Producers are also required to submit on the 25th of each month, beginning Oct. 25, production and delivery schedules for the third following calendar month, on

Form PD-662. Gas cylinders are now used almost entirely by the armed forces.

Steel for Household Use To Be Cut Again

Washington

• • • WPB last Thursday warned that existing limitations on the use of iron and steel in kitchen and household utensils, contained in Order L-30, would become more strict when permanent supplementary orders are issued. The war agency announced that L-30 which provides a 70 per cent limitation on the use of iron and steel in Group I products and a 50 per cent limitation for Group II products would continue in effect for the month of October.

Dairy Repair Order Extended for 90 Days

Washington

• • • Processors of dairy products have had their maintenance, repair and operating and replacement material order P-118 extended for 90 days to Dec. 31, WPB announced last week. The order was to expire on Sept. 30. The order assigns an A-1-j rating for maintenance and repair needs and an A-3 rating for operating and replacement needs for dairy processors.

Use of Nickel Tightened

• • • In a revision of Conservation Order M-6-b last Friday, the WPB restricted nickel uses, except where specifically authorized, to implements of war and other products certified by the Army-Navy Munitions Board to be essential in successful prosecution of the war.

Previously, the order prohibited the use of nickel in a long list of products, and permitted the use of nickel in all other products only on specified allocations. This provision is retained in the original order. However, the general exemption from these restrictions in favor of the armed services, A-1-k or better orders, and where necessary for compliance with safety regulations, is removed.

The amended order also contains a re-phrased provision relating to the use of nickel, under permission of the Director General for Operations, for products

not appearing on the prohibited list. No substantial change in control is involved here.

New Schedule for Hand Tools

••• Production of heavy forged hand tools was limited Oct. 3 in a new schedule of L-157. Schedule No. 4 of the order states that no heavy forged hand tool which does not conform to the size, type, grade, finish, weight and standard established by it may be produced except on approval of WPB.

Heavy forged hand tools covered by the schedule include bars; blacksmiths' anvil tools; mauls and hammers or sledges weighing four pounds or over; hoes weighing three and a half pounds or over; mattocks, picks, railway track tools, tongs, wedges; mine blasting hand tools, mine breast drills and miscellaneous other forged hand tools.

An appendix and table attached to the schedule lists the tools and the regulations covering them.

Varieties of heavy forged hand tools are reduced from approximately 1150 to 357. It is estimated that through this limitation and control program delivery of tools to the armed services will be speeded and, in addition, approximately 5 per cent of the steel required will be saved for other use in the war effort. This amounts to about 2400 tons.

Parts manufactured for repair and maintenance of heavy forged hand tools are not subject to the limitations of the schedule.

Blackplate Rejects

Washington

••• Blackplate rejects are subject to quota restrictions of Order M-104, it was made clear last week with announcement of an amended version of the order. The order sets up quota restrictions for tinplate, terneplate and blackplate. Allocation for the fourth quarter to crown manufacturers of blackplate rejects has already been made but it was emphasized that this allocation is subject to the quota restriction contained in M-104.

Steel Producers Aided

••• Producers of iron and steel, ferro-alloys and blast-furnace coke will be permitted to use higher ratings during the fourth quarter

for repair and maintenance supplies.

Beginning today, such producers may apply ratings of AA-2X for operating material consisting of fabricated metal parts, lumber and all metals—ferrous and non-ferrous—appearing on the revised materials list of Form PD-25A. Ratings of A-1-a may be applied to all other operating material. These ratings may be applied by producers in advance of receipt of PRP certificates for the fourth quarter.

Smaller producers, and Canadian producers who have not yet been brought under PRP, were granted the use of the same ratings by Preference Rating Order P-68, as amended Oct. 3.

Types of Milk Cans Cut

Washington

••• WPB's Conservation Order M-200, issued last Friday, will cut by two-thirds the amount of steel used in the manufacture of milk cans and will reduce the types of cans from 125 to 17. It is estimated that the order will result in an annual saving of 17,800 tons of steel, 15,700 by the restriction on the use of steel and 2100 tons by the simplification provisions. Steel consumed in milk can production in the year ended June 30 amounted to 27,500 tons. WPB said that under the program 850,000 cans of specified sizes will be produced to June 30, 1943.

Simplification provisions are:

1. Shipping containers will be produced only in these sizes: 1 gal.; 2 gal.; 2½ gal.; 3 gal.; 5 gal.; 8 gal.; and 10 gal.
2. Only covers of the sunken-cap type without an "umbrella" will be allowed. These are sometimes called "plug" covers. The steel for covers is to be of maximum 20 gauge thickness.
3. Gauge for 5 gal. containers and also for 8 and 10 gal. containers is specified. The provisions call for a thinner steel plate on the body of the container, but rims and bottoms, where the heaviest wear takes place, will still be of ample thickness.
4. Neck diameters for 5 gal. containers must be either 6½ in. or 7 in.; for 8 gal. containers, 6½ in. or 7¼ in.; and for 10 gal. containers, 6½ in., 7 in., or 7¼ in.
5. Handles can now be made only of stamped steel, not tubular steel, for 5 gal., 8 gal., and 10 gal. containers.

Containers already in process as of the date of the order, are not restricted by the gauge and handle provisions of the order if they are completed on or before Nov. 1.

Ten-gal. containers will be 6 lb. lighter as a result of the simplification provisions while the 5 gal. and 8 gal. containers will be 3 lb. lighter. These ordinarily weigh 25 to 30 lb. each. Most of the savings will come in the cover which will be cut 2 or 3 lb. as a result of the elimination of the "umbrella" type.

Bootleg Forms for Priorities Revealed

Chicago

••• Bootleg forms, forms that served no useful purpose and forms that required information impossible to obtain were turned up during a recent WPB study of means of lightening the load of questionnaires which has plagued industry since the organization of WPB.

The study, conducted by the WPB committee for the review of data requests, has already resulted in the elimination of more than 70 forms and the consolidation or simplification of 130 questionnaires, Joseph L. Lubin, committee chairman, reported here last week at a meeting of the American Institute of Accountants.

(NOTE—PD forms recently declared obsolete are listed in the new *Priorities Guide* elsewhere in this issue.)

Bootleg forms, Lubin explained, were forms that had never been authorized.

Chief criticisms of the questionnaire situation, the committee found, were based on the following: conflicting instructions, ambiguous phrases, meaningless data, unavailable information, oversized forms and forms not applicable to the companies receiving them.

Steps taken to correct these objections, in addition to the complete elimination of some forms, include the placing of all mimeograph and duplicating machines under centralized control, and forbidding the sending of telegraphic requests without specific approval. After Dec. 31 it is planned to identify all official and approved forms with a Bureau of the Budget serial number. All forms not so numbered may be considered unofficial.

Forms are also to be standardized as to shape and size. All forms printed after Aug. 1 will conform in size and spacings to that of a standard typewriter carriage.

Among the forms which were simplified, Lubin specifically cited WPB-732, PD-600, PD-601 and PD-332.

Lubin emphasized that the activities of the compliance section of WPB were growing in scope and to meet the requirements of this division, a plant should always have well kept records.

The most important functions of

an accounting system, he said, should be:

(1) To supply all the essential facts necessary to complete applications on PD-200 and PD-1-a, and other priority instruments;

(2) To maintain records in such shape that they can be inspected readily for identification and substantiation of all facts and figures submitted on data request forms;

(3) To highlight the use and holdings of scarce materials.

Order L-41-b Clarified

• • • Certain types of construction using non-metallic materials and equipment designed to insulate buildings so that fuel can be conserved, may be undertaken without specific authorization. In a supplement to Construction Conservation Order L-41-b, it was provided Oct. 2 that the order will not apply to construction begun prior to Jan. 1, 1943 which is necessary to the installation or application in buildings of certain materials and equipment.

M-154 Effective Nov. 1

• • • The effective date of the scheduling provision of Order M-154, governing uses of thermoplastics, previously postponed to Oct. 1, has been again postponed to Nov. 1. Proposed revision of the order is now under way.

Nov. 1 Deadline on Furniture

Washington

• • • In an identical interpretation of Orders L-135 and L-49 last Friday, WPB said that furniture and other household upholstered articles using iron and steel must be completed by Nov. 1 except for application of the final fabric cover.

Caskets Restricted

Washington

• • • Caskets of specified measurement which contain more than 25 per cent of iron or steel by weight were frozen in the hands of manufacturers, by Order L-64-a, issued last Friday. About 4000 caskets, some only partly fabricated, are affected. Manufacturers may not sell, lease, trade, lend, ship, deliver or transfer such caskets, except for authorized uses.

The specified inside measurements follow: 74 $\frac{3}{4}$ -in. or more in

length; 22 $\frac{3}{4}$ to 23 $\frac{1}{4}$ -in. in width; 16 $\frac{3}{4}$ to 19 $\frac{1}{4}$ -in. in depth. The order applies to any specified casket, whether or not it can provide hermetic sealing, and whether manufactured before or after Oct. 2.

Manufacturers affected by the order are required to file a report with WPB on Form PD-590, by Nov. 15, stating the number and type of the specified caskets on hand.

Procedure for Rerating Deliveries

• • • Priorities Regulation 12 as amended Aug. 10 provides that deliveries bearing preference ratings may be rerated without increasing the amount of the material to which the rerating may be applied or extended.

Reratings may be effected through the issuance (by the Director General for Operations or by authorized government officials) of either:

(1) A new preference rating order or certificate.

SCRAP RAINS HELL ON AXIS:

That's the title of this inspired scrap poster distributed by the Wickwire Spencer Steel Co., New York. The company has furnished over 5000 poster enlargements like this to various local and state WPB salvage committees. Requests are said to be pouring in from all over the nation.



(2) An amendment of an existing order or certificate.

(3) A rerating direction on Form PD-4x (or such other form as may be prescribed) specifying the change of rating and the items to which it applies.

A single rerating direction may be used to rerate deliveries to be made under different contracts with the same contractor, and may specify different new ratings for separate deliveries to be made under a single contract.

A rerating direction in the PD-4x series is to be used only to rerate deliveries under prime contracts directly to, or construction of facilities under direct contract with, the Army, Navy or other U. S. government agencies specified in the definition of "defense order" appearing in Regulation No. 1 as amended. In addition, notwithstanding the limitations indicated on PD-4x, to rerate any other delivery for a prime contractor or subcontractor with the Army, Navy or other government agency if the delivery previously had been rated by PD-3, PD-3a, PD-4 or PD-5 or by an order in the P-19, P-19-a or P-19-h series countersigned by an officer of the Army or Navy, and provided further that the original rating was issued directly to and in the name of the person who is to receive the delivery to be rerated.

Rerating directions on forms in the PD-4x series may be prepared and issued only by authorized government officials.

(Rerating of PRP certificates is discussed in this priorities guide under the section devoted to explanation of the Production Requirements Plan).

Use of Zinc Curtailed

• • • The use of zinc in the manufacture of closures for glass containers is prohibited after Oct. 10. The action was taken in Amendment No. 1 to Conservation Order M-11-b. A new list, A-1, in order M-11-b, lists certain items, and dates after which zinc may not be used in their manufacture.

Battery Output Limited

• • • Control over production of dry cell batteries and flashlights for civilian use was ordered Oct. 3. Cuts in civilian production of both batteries and flashlights in the

hands of manufacturers were put under priority control. At the same time, the Order (L-71 as amended) permits smaller plants which do not have large military orders to operate at a considerably greater rate of civilian production than larger plants.

Curtailement of civilian production, put on a quarterly basis, will result in only 35 per cent of the number of radio batteries produced in 1941 being manufactured. Production of flashlight batteries will be cut one-half, compared to 1941 output. Other types of dry cell batteries will be reduced 10 per cent.

L-78 Extended to Oct. 20

Washington

• • • WPB announced last Thursday that Order L-78, covering fluorescent lighting fixtures, which was due to expire Oct. 1, has been extended to Oct. 20. Discussions concerning changes in the present order are currently being held and pending final decision it was necessary to extend the deadline a short time, rather than allow it to expire.

Utilities Order Extended

Washington

• • • WPB Order P-46 governing the flow of materials to all types of utilities for essential maintenance and small construction projects has been extended to Oct. 10. An amended P-46 is now being prepared.

• • • Two steel warehouses, Republic Metals & Roofing Materials, Inc., Chicago, and Athos Steel Service, Philadelphia, were cited Oct. 1 for alleged violations of the WPB order which set up quotas for such establishments. Suspension Order S-91 charges that Republic Metals & Roofing Materials, during the calendar quarter beginning Jan. 1, accepted some eighteen tons of steel in excess of its permitted quantities. The penalty order provides that during the quarter beginning Oct. 1, the offending warehouse's quota of steel products listed in Schedule "A" to Supplementary Order M-21-b be reduced by 150 per cent of the excess steel which it had accepted during the first three months of the year.

Suspension Order S-104 states that Athos Steel Service accepted more than 100 tons of steel in ex-

cess of its established quota for the first quarter of this year. This warehouse also has its normal quota of Schedule "A" products for the three coming months reduced by 150 per cent of the steel which it accepted illegally from Jan. 1 to March 31.

OPA Charges 26 with "Black Market" Deals

Cleveland

• • • In its drive against alleged "black markets," the Office of Price Administration last week filed in Federal District Court here injunction action against 25 companies and one individual, L. Lewis of Detroit. The injunction petition, filed by James G. Gruener, OPA regional attorney, revealed ways in which the OPA claims 24 of the defendants, all dealing with Sterling Steel Products Co., Cleveland, were alleged to have violated price ceilings by overcharging and overpaying for steel a total of more than \$225,000 in some 50 transactions.

Federal Judge Emerich B. Freed granted a temporary restraining order in the 26 cases and set Oct. 10 for a hearing on a permanent restraining order. Investigations of the Sterling Steel Products Co.'s transactions since Feb. 11, 1942, were started on Aug. 14 by J. Paul Hellstrom, associate business specialist of the Washington OPA and formerly with Joseph T. Ryerson & Son, Inc. The investigations, according to Mr. Hellstrom in a 27-page affidavit, revealed that Sterling, in transactions with the other defendants, "literally ran the gamut of violations of Schedule 49," allegedly selling large quantities of steel at prices in excess of the maximum prices permitted for both carload and l.c.l. quantities.

According to the affidavit, not only did Sterling sell steel to certain of the other defendants at prices far in excess of the ceilings, but some of the purchasers, in turn, resold, with the aid of commission men and others, at prices which exceeded the price schedule by even greater amounts than those involved in the sales by Sterling, the OPA alleges.

One case cited, taking place about May 8, 1942, the Kulka Co., Inc., of Pittsburgh, sold 45,480 lb. of 3/4-in. round bars and 45,420 lb.

of 1-in. round bars to Sterling, all at a price of \$2.95 per 100 lb., f.o.b. delivered Pittsburgh. The maximum price of this material as set by Schedule 49, was not more than \$2.175 per 100 lb. f.o.b. delivered Pittsburgh. Thus, overcharges paid by Sterling and received by Kulka amounted to at least \$704.48.

Sterling then was said to have resold this material to D. Loveman & Son, Cleveland, at \$3.10 per 100 lb., f.o.b. delivered Pittsburgh. Here, the price ceiling is also \$2.175 per 100 lb., f.o.b. delivered Pittsburgh. Thus, the overpayments on this transaction to Sterling totaled at least \$840.83.

Finally, this material allegedly was resold by D. Loveman & Son to Pittsburgh Steel Foundry Corp. at a price of \$4.85 per 100 lb., f.o.b. delivered Glassport, Pa., whereas the maximum price provided by the Schedule No. 49 was not more than \$2.175 per 100 lb., f.o.b. delivered Glassport. Pittsburgh Steel Foundry Corp. therefore paid to D. Loveman & Son \$2,186.15 more than the ceiling price for the material, it was said.

In connection with the last transaction, it was alleged that D. Loveman & Son's invoice to Pittsburgh Steel Foundry Corp. described the material sold as "cold rolled round steel bars" whereas that description did not appear on either the invoice of Kulka Co., Inc., to Sterling or on the invoice from Sterling to D. Loveman & Son, both of which covered the same material in the same car. The invoice to D. Loveman & Son described the material as "hot rolled round bars," it was said.

Under the price schedule, cold rolled bars can be sold at \$3.225 per 100 lb. for the 1-in. bars and \$3.275 per 100 lb. for the 3/4-in. bars. It was said the purpose of the change of description by D. Loveman & Son was made clear in a letter to Pittsburgh Steel Foundry Corp., dated March 28, 1942, which read: "You will please note that we have marked some cold rolled, however, you know the reason for same." This letter allegedly referred to Pittsburgh Steel Foundry Corp.'s purchase order covering this material, dated about March 28, more than a month prior to the shipping date. The price charged by D. Loveman & Son for this material was so

high that it not only exceeded the carload price for cold rolled bars but also the l.c.l. price for quantities in excess of 1000 lb. for these cold rolled bars, OPA said.

A tabular summary of the alleged overpayments and overcharges, totaling \$225,902.25 on the purchase and sale of 31,989,535 lb. of steel brought out the violations with more clarity, said a representative of OPA.

Armor-Bronze, Inc., Taunton, Mass.; Briggs & Turivas, Inc., Blue Island, Ill.; Ceri, N. R., Milwaukee; Columbian Steel Tank Co., Kansas City, Mo.; Eastern Steel & Metal Co., New Haven, Conn.; Empire State Novelty Co., New York; Evans-Case Co., Inc., North Attleboro, Mass.; Fisher Bros. Steel Corp., New York; Gates City Iron Works; Lewis, L., Detroit; Lorensen-Matthews Mfg. Co., Dickson City, Pa.; Loveman, D., & Son, Cleveland; Northeastern Steel Corp., New York; Parkside Sheet Metal Works, Inc., Chicago; Peerless Steel Products, Inc., Detroit; Pittsburgh Steel Foundry Corp., Pittsburgh; Republic Structural Iron Works, Cleveland; Riverside Steel Co., Wheeling, W. Va.; Standard Sales Steel Co., Inc., New York; Steel Rolling Co., Inc., New York; Sterling Steel Products Co., Cleveland; The Kulka Co., Inc., Youngstown; Whiting & Davis Co., Plainville, Mass.; Wrought Washer Mfg. Co., Milwaukee; Yale & Towne Mfg. Co., North Chicago, Ill.; Zurbach, L. E., Steel Co., East Somerville, Mass.

••• Among recent actions by OPA are the following:

Laclede Steel Co. has been granted a price exception on shipments of steel billets on lease-lend contracts. In the case of steel billets which are not products ordinarily produced by this company OPA has permitted addition of dislocated freight charges to the schedule maximums but denies such addition concerning steel bars which ordinarily would be absorbed by the company in its normal course of business.

D. S. Buisson, fluorspar operator, has applied for price approval on a metallurgical grade of fluorspar which had not been previously produced in its operating area. The OPA action represents a price in line with maximum prices of another producer in the nearest area.

OPA approved a petition on the part of the Norton Co. to price special bonded abrasives on basis of price formula submitted with the petition. This formula takes into account cost of material, labor, and overhead as of March 1942. OPA further stipulates that each order so priced carry individual specifications — showing that they differ materially and cannot be included in company's price lists.

The Hughes Tool Co., making steel castings, previously had been granted a price exception on cer-

tain dislocated tonnage of steel castings which had been priced under RPS 41. This request was granted in part. Under the current petition the company requested further exception to its maximum prices when requested by the purchaser. OPA concurred.

Pittsburgh Screw & Bolt Corp. on track bolts claimed that it had been sustaining undue hardship through provisions of MPR 147 in absorbing excess freight charges arising from dislocated tonnages on shipments of track bolts for War Department account. As the regulation provides that such dislocated tonnages shall not discourage war order production, OPA granted the company's request that it be permitted to calculate its delivery charges on an emergency basing point basis on War Department shipments.

Cleveland Tungsten Co., Inc., Cleveland, effective Sept. 28 may sell tungsten metal powder containing a minimum of 99.7 per cent tungsten and a maximum of 0.20 per cent alkalis and 0.02 per cent molybdenum at \$5.40 per pound f.o.b. seller's plant.

3 Regulations Are Patched

••• Priorities regulations have been modified in amendments to Regulations 3, 11 and 12. The effects on plants operating during fourth quarter under PRP are:

Companies may extend ratings served on them to obtain materials not on the "Materials List." (Previous regulations permitted use only of PRP ratings.)

Companies are required to reduce outstanding orders in line with PRP application until Oct. 10, or five days after they receive their processed applications returned. (Previous regulation called for an Oct. 5 deadline.)

Permission formerly granted of revising rating pattern twice a month is cancelled. (All PRP ratings have been moved up into the AA brackets, eliminating the re-rating expedient provided under the regulation.) Where necessary, company may extend ratings they receive, when no rating has been provided under PRP.

Steel mills using PRP for repair, maintenance and operating supplies are not specifically limited as to the quantities of such supplies, with the exception of the general inventory limitation as

provided under Priorities Regulations No. 1.

In applying or extending its PRP rating, a company must enter its PRP Certificate Number on its endorsement as well as its name.

Effects of amendments on plants and industries not operating under PRP are:

A company not operating under PRP may extend ratings for operating supplies in any month up to 10 per cent of the cost of production materials, using the same ratings as carried by the materials. Definition of operating supplies has been amplified.

Steel Mills Given Aid

Washington

••• The ratings for maintenance, repair and operating supplies for steel mill operations were raised to AA-2X and A-1-a by WPB last Saturday in an amendment to Order P-68. The AA-2X rating is to be applied to the purchase of fabricated metal parts, lumber and all metals, ferrous and non-ferrous. The A-1-a rating may be applied to the purchase of all other operating material. Producers may apply the ratings even though PRP certificates for the fourth quarter have not been received.

The Focke-Wulf FW 190A3

(CONTINUED FROM PAGE 40)

• much careful wind tunnel work and probably extensive flying trials with the prototype before production reached an advanced stage. Probably about 400 Fw 190s have been completed now. The bombing of the Bremen factory by the R.A.F. may have held up output, but the wide subcontracting to Arado and Ago may have prevented a great deal of dislocation.

Kurt Tank and his designing team have got down to fundamentals in the Fw 190. They have concentrated on the things that matter and they have made a difficult machine easy to build. The detail design, the instruments, the electrical gear and the cowlings are outstanding. It is a formidable weapon, an airplane from which British and Americans can learn much, but an airplane which can be superseded rapidly and decisively. The general impression after examining the Fw 190 carefully is that it does not quite live up to its reputation.

Machine Tool Builders Push Output Despite Lack of Material, Men

New York

• • • The government is counting on the machine tool industry to meet the war demands placed upon it and is expecting the builders to use their ingenuity in getting out production despite material and manpower shortages, according to Tell Berna, general manager of the National Machine Tool Builders Association, addressing the 41st annual convention of the association, held at the Waldorf-Astoria Hotel, Oct. 5 and 6. Pointing out that allocation of steel and other critical materials was the answer to the confused priority picture, he indicated that most tool builders' estimates for third quarter requirements had been far too low, and even these underestimates had been met only part way. Mr. Berna urged that manufacturers set up better methods for obtaining accurate reports to serve as the basis for allocation of steel to the industry.

Mr. Berna predicted that because of the shortages of copper, a directive may soon be issued by the WPB telling tool makers to use smaller and higher speed motors, to use open motors in place of totally enclosed frames, and to apply single-speed instead of multi-speed motors to their machines in order to cut down on copper requirements for the windings. Exceptions will probably be allowed where the use of such equipment is dangerous to the operation of the equipment. He urged that members of the association fall in line with the new electrical standards, which have since been adopted by the Electric Code in Paragraph 670.

After spending three weeks in Washington as a member of an industry advisory committee to the WPB, Geo. H. Johnson, president of the association and of the Gisholt Machine Co., assured the membership that the machine tool industry is to be given intelligent and careful consideration by the people in Washington who are coordinating the war effort. "The government and the machine tool industry are closer to a mutual understanding and solution of the nation's machine tool war production problems than has ever before been the case," he said.

"Machine tool requirements are today in the process of being surveyed in the light of actual facts. While final conclusions still remain to be drawn, I can tell you now that we can see a time ahead of us—not in the unlimited future—when our initial job of retooling American industry for war production will have been completed. But let me emphasize that this job is *not yet done* and until it is done, we must continue to strive for maximum output," Mr. Johnson continued.

"Washington is now beginning to consider what may happen to our respective companies when we will have completed the job of retooling America for war, and settle down to the job of supplying only the machine tools necessary for such new projects as will most certainly develop and for the maintenance of the war production program," the speaker said. "How far off this may be is, of course, still a question. The industry has a backlog of over a billion dollars—representing, on the average, eight months' output on a full production basis. But, of course, the changed requirements will come in some companies earlier than in others.

"It is only reasonable to expect that excess plant capacity, where it develops, will be used for the manufacture of parts for planes, tanks, guns or other munitions—or for the manufacture of parts for other machine tool builders making machine tools for which there still remains an extreme demand. The extent to which this may materialize will depend upon factors having to do with manpower, with materials, with the shifting fortunes of war and with many other factors which of necessity are uncertain.

"Provision for the period of changing requirements bids fair to become a factor in government planning with respect to the machine tool industry. But in the meantime it is vital that we continue to drive ahead, not just on the basis of maintaining our present production rate, but on the basis of increasing our production rate until we have built and shipped

all machines now on order," Mr. Johnson concluded.

Renegotiation of machine tool contracts under section 403 of the current tax law poses a problem of what are reasonable profits and what are "excess profits." Ralph E. Flanders, president of the Jones & Lamson Machine Co., and chairman of the government relations committee of the association, in an attempt to analyze the profit situation of the machine tool industry, illustrated some charts based on the published financial statements of 19 representative machine tool producers. Profits were analyzed by showing gains in terms of percentage of net worth for each year, beginning with 1929.

The charts indicated that this group had plowed back all earnings in the form of increases in inventory and increases in fixed assets (plant and machinery) to finance the huge expansion program undertaken in the last three years; also that dividends have actually been paid out of surplus since 1938. The money with which to make possible refunds is "simply not there," at least in liquid form. It is tied up in slow moving assets.

In the light of the demands of the armed services for men, the machine tool industry cannot avoid some losses in manpower as a result of the draft, according to Capt. E. R. Henning, U.S.N., Machine Tool Section, Army-Navy Munitions Board, who urged the machine tool builders to use older men and more women. Efforts of the machine tool industry to employ women have not been "exactly startling," the speaker said, pointing out that in England 35 per cent of those employed in machine tool plants were women against 3 per cent in this country.

Captain Henning gave this advice to association members if they were to suffer less as a result of selective service:

"1. Acquaint local Boards with your problems. Get Board members to visit your plant and find out how machine tools are made.

"2. Maintain adequate records of draft status of all male employees.

"3. Use form 42A to renew occupational deferment at least a month before expiration date of initial deferment.

"4. Make use of local appeal agencies before taking problem to Washington.

"5. In vital cases, refer matter to machine tool section of A-N Munitions Board, who will plead case with officials of selective service."

PERSONALS . . .

• **Henry A. Roemer, Jr.**, formerly manager of sales of steel and wire products, has been advanced to assistant general manager of sales, Pittsburgh Steel Co., and **Norman F. Melville**, formerly assistant manager of sales of steel and wire products, has been made manager of sales of that department.

• **H. J. Burgess**, superintendent of the feeder division since 1937, has been named general superintendent in charge of all manufacturing

at the Westinghouse Electric & Mfg. Co.'s East Springfield plant. Mr. Burgess joined the company in 1917 and two years later was promoted to the post of assistant foreman of the toolroom. In 1927 he became supervisor of cost reduction, and in 1935 foreman of tool design and tool manufacturing.

• **A. E. Hitchner**, former manager of the Los Angeles office of the Westinghouse Electric & Mfg. Co., has been appointed assistant to the manager of the company's industry sales departments with headquarters at the East Pittsburgh works.

• **Walter J. Kelly**, former acting manager of the industrial relations department of the Tennessee Coal, Iron & Railroad Co., Birmingham, has been named manager of the department, and **John H. Williamson**, heretofore acting assistant manager, has been named assistant manager.

• **C. N. Kirkpatrick**, vice-president and general manager, has been appointed president of the Landis Machine Co., Waynesboro, Pa. Mr. Kirkpatrick will continue his duties as general manager. **G. M. Stickell**, sales manager, has been advanced* to vice-president to succeed Mr. Kirkpatrick, and will also continue as sales manager.

• **Herman E. Bakken**, who has been assistant director of research along with J. D. Edwards, has been made an associate director of the Aluminum Research Laboratories of the Aluminum Co. of America. **E. H. Dix, Jr.**, chief metallurgist, and **R. L. Templin**, chief engineer of tests, have been made assistant directors.

• **Walter L. Maxon** has been appointed manager of the Allis-Chalmers Mfg. Co.'s crushing cement and mining machinery department. Mr. Maxon succeeds **Herman Schifflin**, who is retiring.

• **Elmer L. Ford**, vice-president and manager of New England operations of the Turner Construction Co., has been made a director. He joined the company in 1909 as timekeeper and served in the

New York territory until 1919, when he was shifted to Boston.

• **William G. Hume** has been elected a vice-president of the Reynolds Wire Co., Dixon, Ill. Mr. Hume was formerly general manager of sales of the Pittsburgh Steel Co.

• **Erwin E. Brinkman** has been named plant manager of the Reynolds Wire Co. Mr. Brinkman, before going to the Reynolds Wire Co., was production engineer and consultant for the seven branches of the Line Material Co., of Milwaukee.



H. A. ROEMER, JR., assistant general manager of sales, and NORMAN F. MELVILLE, manager of steel and wire product sales, Pittsburgh Steel Co.



W. G. HUME and E. E. BRINKMAN, vice-president and plant manager, respectively, Reynolds Wire Co., Dixon, Ill.



• **Walter J. Kelly**, who has been acting manager of industrial relations of the Tennessee Coal, Iron & Railroad Co., Birmingham, and **John H. Williamson**, who has been acting as assistant manager of industrial relations, since October 1940, were today appointed to the positions of manager and assistant manager, respectively, of that department. **James F. Vance**, former manager, who has been acting in an advisory capacity since October 1940, has retired under the retirement rules of the United States Steel Corp.

• **F. A. Endress** has resigned as president of Tuff-Hard Corp., Detroit, to devote more time to research and development work as the company's technical consultant. The office of president remains unfilled temporarily. **John Z. Lander**, formerly vice-president, now is executive vice-president. Elected to the board were **Alan P. Beebe**, vice-president of the Peninsular Grinding Wheel Co., Detroit and **Steven J. Menzel**, president of Motors Metal Mfg. Co., Detroit.

• **D. L. Immel** has been promoted to assistant plant superintendent at the Copperweld Steel Co.'s Warren, Ohio, plant.

• **Elbert E. Husted** has been elected president of the Titeflex Metal Hose Co., Newark. Mr. Husted first joined the Titeflex organization in 1924, and served for approximately one year in various departments in the factory. He then represented the company in a sales capacity, becoming its sales manager in 1930. In 1936, he was made a vice president, and in 1938 also became general manager of the company.

• **Marvin J. Udy** has been elected to the board of directors of Chromium Mining & Smelting Corp., Ltd., and retains his title and position as vice-president in charge of research and technology. **H. V. Glunz**, formerly superintendent of the company, has been made vice-president in charge of production.

• **Harold A. Wilson**, former sales representative for the Drive-All Mfg. Co. in Chicago has recently been advanced to the position of manager of the Chicago District. Mr. Wilson succeeds **J. Ralph Griffith** who has been made gener-

al sales manager for the factory and the Drive-All home office in Detroit.

• **Charles H. McCrea** has been elected president of the National Malleable & Steel Castings Co., Cleveland, succeeding the late C. C. Gibbs who died Sept. 9. Mr. McCrea has been with National Malleable since 1913, his continuous association with the company being broken only by service as captain in the U. S. Army during the last war. After the war he did sales work in Germany, France, Belgium, England, India, New Zealand and Australia, and returned to Cleveland in 1931 in the capacity of sales manager. In May, 1942, he was made first vice-president and a director of the company, holding this position until his present appointment.

• **George J. Weber** has been appointed engineer of tests of the Association of Manufacturers of Chilled Car Wheels, with offices in Chicago, to succeed **R. L. Salter** who resigned to join the staff of the Southern Wheel Division of the American Brake Shoe & Foundry Co. in New York.

• **James G. Johnston**, superintendent of the Endicott, N. Y., factory of International Business Machines Corp., has been made general works manager for all of the company's plants in Endicott, Washington, Rochester and Poughkeepsie, N. Y. He will be succeeded as superintendent of the Endicott factory by **William L. Lewis**, who was previously his assistant. **Charles B. Kintner**, previously supervisor of night operations at Endicott, will become assistant superintendent succeeding Mr. Lewis. The company also announced the appointment of **Frank H. Welsh, Jr.**, who has been serving as head of the factory training program at the Poughkeepsie plant, to the position of supervisor of the factory training program in all IBM domestic plants and in its Toronto plant. **Walter E. Crotsley**, production manager at the Endicott plant, has been appointed to a newly created post in the IBM educational department in which he will further coordinate educational activities of the organization with those of its field forces.

• **Charles C. Chamberlain** has been named general sales manager of Jenkins Brothers, Bridgeport.

OBITUARY . . .

• **Roy Hunter**, district sales representative in the Northern Ohio and Western Pennsylvania area for Gisholt Machine Co., Madison, Wis., died Sept. 12, aged 54 years. He had been for years identified with the machine tool industry, including a long association with the International Machine Tool Co., prior to his becoming a member of the Gisholt field sales personnel two and a half years ago.

• **Edward H. Thomas**, manager of New York office of Farrel-Birmingham Co. of Ansonia, Conn., and Buffalo, died Sept. 13, following a heart attack.

• **Chriesant M. Schmidt**, former vice-president and director of the Alloys Products Co., Waukesha, Wis., died Sept. 6, aged 67 years.

• **Wilbur L. Gourley**, president of the Lehmann Machine Co., St. Louis, died Sept. 19, aged 50 years. He was connected with the Anderson & Gourley Gas Appliances Co. before heading the Lehmann company.

• **Frank Low**, vice-president and sales manager of Ludlow-Saylor Wire Co., St. Louis, until his retirement, died recently. He was 84 years old.

• **Clarence O. Ostenso**, purchasing agent for the Pioneer Engineering Works, Minneapolis, for the past 12 years, was killed Sept. 18. He was 33 years old.

• **William Williamson**, president of the Williamson Metal Treating Co., Milwaukee, died Sept. 23 after a short illness. He was associated with the Thurner Heat Treating Co., Milwaukee, for 20 years before organizing his own firm a year ago.

• **Robert Chadwick**, formerly associated with the Dominion Bridge Co., Ltd., Canada, later as chief engineer of the Reading Iron Co., and of late as industrial engineer for Stone & Webster Engineering Corp., Boston, died Sept. 24.

• **Ambrose A. Peters**, president of the A. L. Kiefer Co., Milwaukee, died Sept. 22 after several months' illness.

• **Frank J. Skobis, Sr.**, one of the founders of the Skobis Steel & Fabricating Co., Milwaukee, died Sept. 21. He was 84 years old.

NON-FERROUS METALS

... Market Activities and Price Trends

Copper Ingot and Wire Bar Output Unbalanced

... Copper allocations for the month were out sufficiently early so that quite a collection of woes had jelled by Oct. 1. Allocation holders are finding it harder to get the shapes they want.

Because of huge ammunition requirements, much copper is going into brass, and copper for this is needed in the form of ingots and ingot bars. Normally, the major use of copper is wiring, for which wire bars are needed. Production, particularly from Latin America, hasn't quite caught up with the switch, which has been really noticeable only lately. A good many copper users were, by Oct. 1, pouring out complaints in Washington.

H. O. King, chief of WPB's copper branch, estimates the current total copper supply at 200,000 tons per month. This is the largest supply in the country's history, with both domestic production and imports outdoing all previous years. Approximately 31 per cent of this year's total copper supply will come from mill scrap.

Twenty-four million lb. of copper have been saved in the last few months by substituting silver for copper in electrical conductors, the WPB has announced. This saving represents enough copper to make 95,000,000 aircraft machine gun bullets, plus 600,000 anti-tank shells, plus 1,500,000 anti-aircraft shells.

The new international tin agreement, made recently in London, is in conflict with the Atlantic Charter's promise to make raw materials available to all nations, "great or small, victor or vanquished," the *New York Times* said Tuesday. "Article IV of the charter," says the *Times* in a dispatch from London, "presumably means the abolition of producers' control experiments, of which the pre-war tin agreement seems typical since it created a shortage of supplies. The new agreement binding the governments of the United Kingdom, the Netherlands, Belgium and Bolivia to control tin production until the close of 1946 is almost an exact copy of the agreement

which regulated the market from the beginning of 1937 until the end of last year."

The agreement, while it encourages present war production in areas still controlled by the United Nations, sets limiting quotas of 105 per cent for what, the *Times* says, the signatories regard as "a plan for post-war reconstruction of the industry." The tonnage standards were reported in last week's *IRON AGE*, p. 225.

Although the United States is the largest user of tin, it has only two members on the committee, both of them non-voting; it is to get another (non-voting). Representatives of producing countries alone have a say in the committee, the function of consuming countries' representatives being advisory and palliative.

Tinplate requirements will continue to make the heaviest demands on the tin supply, but the demands normally called "industrial" are becoming increasingly imperative. Ordinarily such consumption runs about like this: solder, 20 per cent; babbitt metal, 10 per cent; other industrial uses, 25 per cent. The automobile industry has been a large consumer of solder and babbitt, but little change in demand is expected there, now that the industry's products have become tanks, trucks and planes. The domestic plumbing industry has been whittled down and will get along without wiped joints in lead pipes, and tin on cable sheaths. The electrical industry, however, will likely need more solder for instruments. Though other classes of users may have to avoid tin bronzes for bearing shells, and get along with thinner babbitt inserts, internal combustion engines will continue to need real quantities of tin for bearings.

Although the lead industry is awaiting with enthusiasm the expected loosening of government restrictions on use of the metal, one school of thought in the trade believes it will make little difference. Paint makers, normally the principal consumers of lead, are able now to get all the lead they require, (the Bureau of Standards recently returned lead to pre-emergency specifications) and their diffi-

culty is in trying to find paint customers. Statuary, roofing, plumbing, automobiles and other products normally using lead are so curtailed as to be poor prospects. Lead foil users are blocked by the scarcity of tin. The only field, so this opinion goes, where lead can expect to find a boom is as a substitute for other metal, to what extent depending much on availability of alloying agents. If tin were plentiful, lead could do wide service in lead-tin alloys. The recent lifting of restrictions on chrome is expected to help some.

Other non-ferrous developments: Calumet & Hecla Consolidated Copper Co. is planning to reopen several of its high-cost properties, among them the Central and the Continental mines, closed for many years. . . . No more zinc covers for mason jars, WPB says. Housewives can use a substitute porcelain top with steel rim. . . . New electrolytic zinc capacity is being constructed at the Great Falls and Anaconda, Mont., plants of the Anaconda Copper Mining Co. The enlarged capacity at Great Falls will supply an additional 30,000 tons of zinc annually, that at Anaconda 15,000 tons. . . .

... Spanish coal and lead miners are being exempted from military service for a year or more. . . . The word "nickel" comes from *kupfer-nickel*, copper demon. It was named by German miners, baffled because the ore seemed to contain copper but they couldn't extract it. . . . A Non-Ferrous Scrap Subcommittee of the waste materials industry has been formed by WPB.

Non-Ferrous Prices

(Cents per lb. for early delivery)

Copper Electrolytic ¹	12.00
Copper, Lake	12.00
Tin, Straits, New York	52.00
Zinc, East St. Louis ²	8.25
Lead St. Louis ³	6.35

¹ Mine producers' quotations only, delivered Conn. Valley. Deduct ¼c. for approximate New York delivery price. ² Add 0.39c. for New York delivery. ³ Add 0.15c. for New York delivery.

commercial 85-5-5-5, 13.25c. a lb.

Miscellaneous Non-Ferrous Prices

ALUMINUM, delivered: virgin, 99 per cent plus, 15c.-16c. a lb.; No. 12 remelt No. 2, standard, 14.50c. a lb. NICKEL electrolytic, 35c.-36c. a lb. base refinery, lots of 2 tons or more. ANTIMONY, prompt; Asiatic, nominal, New York; American, 14.50c. a lb., f.o.b. smelter. QUICKSILVER, \$197 to \$199 per 76 lb. flask, f.o.b. shipping point. BRASS INGOTS,

MACHINE TOOLS

... Sales, Inquiries and Market News

Order Rush Has Eased On Machine Tools

Cincinnati

• • • Some evidences of a quieting down of a mad machine tool demand is noted in this area during the past week. Several plants indicated that the rush had now eased up and the gap between orders and production is gradually being closed. In fact, one or two manufacturers indicated that on certain types of tools, very good deliveries are now being made and can be made on new orders coming in. One manufacturer is sending out notices to the trade of this improvement in the situation.

In those quarters where light is now being seen through the stack of orders, manufacturers are thinking more seriously than heretofore of what will be done when the rush of tooling up has been completed. Talk of using machine tool plants for munitions manufacture is, of course, the first thing that comes to hand, and it is reported that some thought along this line has already been done. It is also reported that in one or two instances educational orders were given sometime ago, but that nothing particularly has yet developed along this line.

Of course, the labor supply continues to trouble personnel directors and plans for employing more women in local plants are being accelerated.

Tool Industry Catching Up With Huge Backlog

Cleveland

• • • The incoming orders for the next 30 days in the machine tool industry are very likely to tell the tale as to whether or not capacity has exceeded consumption. As to orders during the past month, according to one authority, they have been few and far between, and during the past six months there has never been a single month in which orders equalled half of those received in March, when every buyer was trying to get orders on the books prior to April 1.

Consequently, March orders

Output of Machine Tools Climbs Again

Washington

• • • Reflecting an increase of 800 in units and \$3,842,000 in value, shipments of new machine tools in August totaled 29,100, valued at \$117,442,000, compared with 28,300 valued at \$113,600,000 shipped in July, according to WPB. The value of the August output was 83 per cent above that of the corresponding month of 1941. A similar increase was made in the present rate of production which now exceeds \$1,400,000,000 a year. Last year the value of machine tools was about \$771,400,000.

jumped deliveries quite a few months, but the slacker months following have permitted delivery schedules to be quoted at about the same interval as preceding the heavy month. Meanwhile, of course, production has been substantially upped, and while incoming orders were higher than during normal times, the increased production rate offset this fact. More machines are on order now than prior to 1942, but production is greater and deliveries are at about the same schedule. The peak has definitely been passed and it is suspected by some in the industry that builders will be seeking new fields by the end of the year.

It is estimated that at the present time deliveries are quoted at seven to nine months in the industry. The greatest problem faced is not materials, but manpower. Draft, enlistments, and transient labor supplies have made it difficult for machine tool builders to maintain the high standard of labor necessary to do this work.

Canada's Gun Output 12 Times That of 1941

Ottawa, Canada

• • • Canada now is producing in a single month more than three times as many naval and field guns and small arms as it turned out in all of 1941, Department of Munitions and Supply, announced. During August three Canadian plants

each started production on a new type of ordnance—a new type 4-in. naval gun, a large anti-aircraft gun barrel, and the Brown-ing tank type gun. There are now 12 types of guns, 16 types of carriages and mountings and 10 types of small arms being produced in Canada. In addition to the foregoing new types, production in Canada includes 25-pounder artillery guns, carriages and trailers; two types of tank guns and mountings; two types of anti-tank guns and carriages; Bofors anti-aircraft guns and mountings, 3.7-inch anti-aircraft guns and equipment; 4-inch naval guns; 12-pounder naval guns; 2-pounder naval guns; naval mountings and small arms of various types.

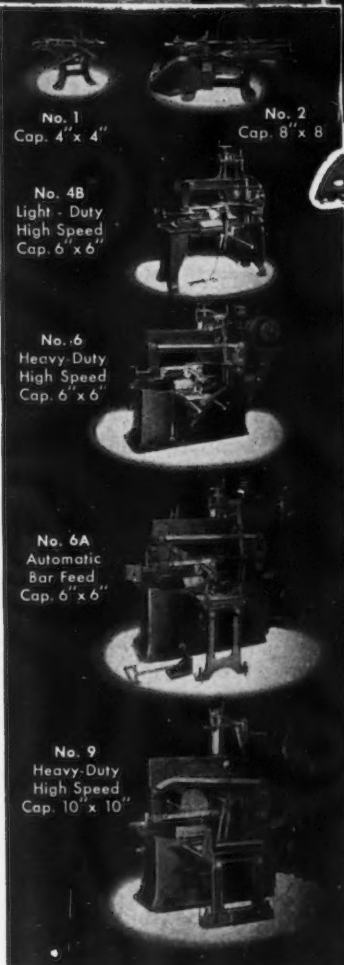
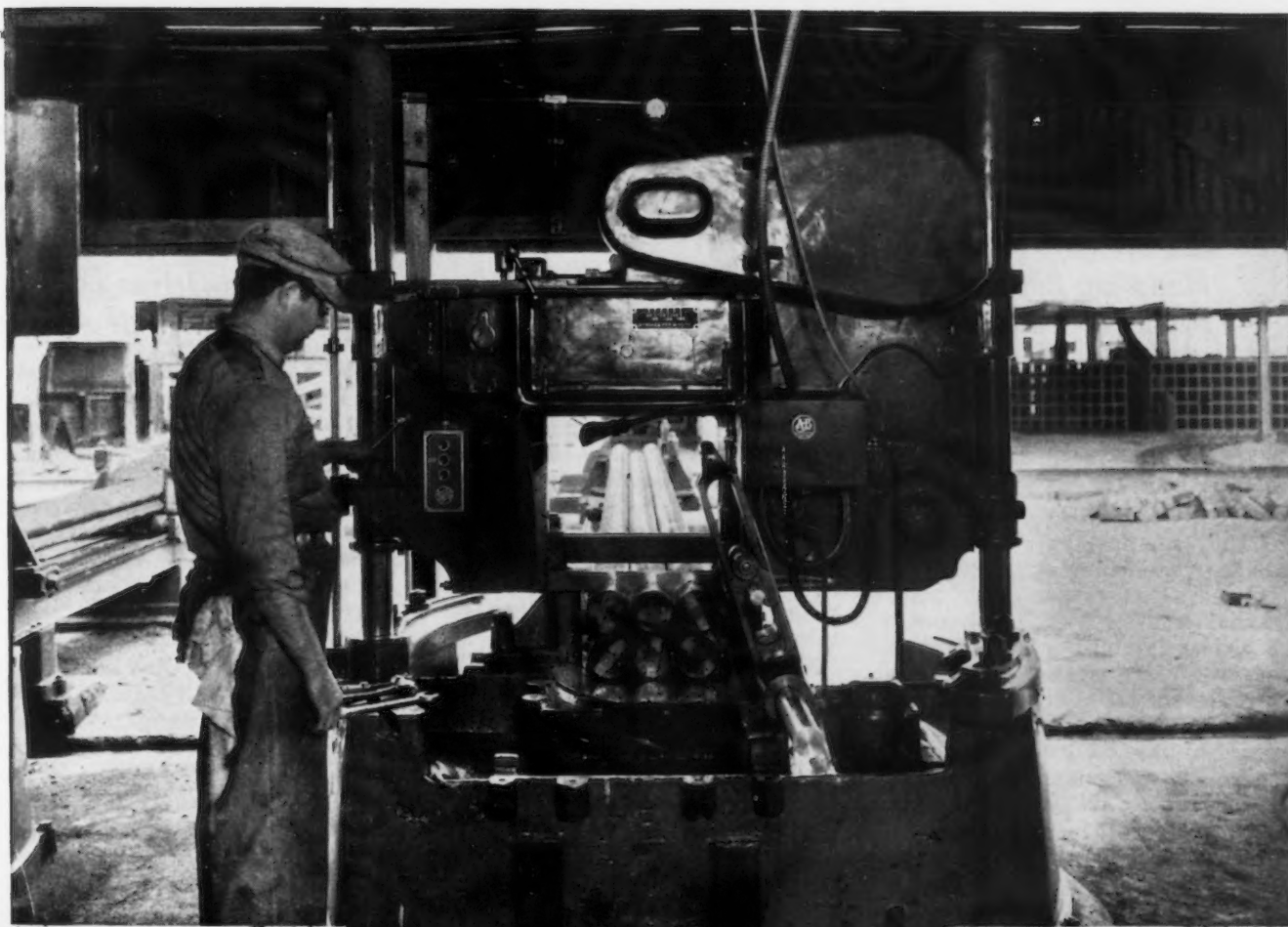
Canadian Firm Starts \$1,500,000 Plant Expansion

Hamilton, Canada

• • • Dominion Foundries & Steel Ltd., Depew Street, has awarded contracts and work will be started immediately on the construction of further additions to its plant, representing expenditure of approximately \$1,500,000. Since the outbreak of war this company has expended on plant enlargements about \$8,000,000, and further additions are necessary to assist in meeting Canada's urgent and growing demand for steel.

For the present undertaking, which will cost, with equipment, about \$1,100,000, plans have been prepared by C. D. Howe Co. Ltd., Pigott Building, and the general contract has been awarded to Frid Construction Co. Ltd., 126 King Street East, and structural steel award to Hamilton Bridge Co. Ltd., Bay Street North. The building will be located on Homer Street and will be 57 x 220 ft., to house the foundry and foundry finishing shop equipment.

In addition to the above expansion work, Dominion Foundries & Steel Ltd., is having plans prepared by Prack & Prack, industrial engineers, Pigott Building, for other enlargements and installation of equipment at the new site on Homer Street, and also to the main works on Depew Street.



No. 1
Cap. 4" x 4"

No. 2
Cap. 8" x 8"

No. 4B
Light - Duty
High Speed
Cap. 6" x 6"

No. 6
Heavy Duty
High Speed
Cap. 6" x 6"

No. 6A
Automatic
Bar Feed
Cap. 6" x 6"

No. 9
Heavy Duty
High Speed
Cap. 10" x 10"

MARVEL SAWS

Cut anything that will go between the jaws

This is one of five No. 18 MARVEL Giant Hydraulic Hack Saws used by a well known Texas tool company to cut-off "multiple bars of alloy steel in round, square, and flat shapes, up to the maximum capacity of the large work-throat (18" x 18")."

These super hack saws are designed for the largest sizes, and toughest steels—up to 18" x 18". After a year's heavy duty service, when asked as to the effectiveness of these saws in solving the cutting-off problems at this plant, the mechanical engineer in charge reported them "very effective."

ARMSTRONG-BLUM MFG. CO.

"The Hack Saw People"

5700 Bloomingdale Ave. Chicago, U. S. A.
Eastern Sales Office: 225 Lafayette St., New York



No. 9A
Automatic
Bar Feed
Cap. 10" x 10"

No. 8
Metal
Band Saw
Cap. 18" x 18"

No. 18
Giant
Hydraulic
Cap.
18" x 18"

SCRAP

... Market Activities and Quotation Trends

Yards Face Task in Handling Public Scrap

••• Mounds of household scrap metal rising over the nation this week appeared like formidable peaks in the eyes of some scrap yard dealers who with reduced manpower are faced with the task of preparing the material promptly for steel plant use.

The newspapers' remarkable drive was achieving results far beyond expectations in many areas. At New York the borough of Queens yielded over 15,000 tons of metal last week, a per capita average of 28 lb., and dealers frankly admitted they were staggered by the thoughts of handling so much miscellaneous material in a hurry. At Detroit (Wayne County) 12,042 tons were collected over a somewhat longer interval.

In view of the shortage of labor at scrap yards, it may be necessary to call for volunteers to sort the public's metal and help prepare it. Much of the material is poor quality but it can be used discreetly by mills during the winter if mixed with heavier scrap. Mills and dealers are elated at the magnet-like power of the daily press.

War Materials Inc. was presented with a challenge by New York City this week when contracts for the recovery of about 50,000 tons of salvage were submitted to WMI. They were said to be just a start. New York bluntly warned WMI that haste was needed and ordinary routine effort would not be tolerated. New York estimated the cost of reclaiming the material at \$2,725,000 exclusive of salvaging 28,000 tons of tunnel liners. WMI plans to open a New York office.

The problem of obtaining adequate labor for scrap yards may necessitate some kind of assistance by government agencies, some market authorities assert. Competition from other industries which pay higher wages and the effect of the draft have reduced yard forces. The lack of torch burners is severe. Wages paid by scrap yards are fairly definitely established in relation to

OPA ceilings. An increase in the ceiling price of scrap to enable yards to pay competitive wages is one method out of the current jam which many dealers are advocating.

Bids Called Harmful to New York Drive Results

New York

••• Trouble is expected by some members of the scrap trade as a result of Mayor LaGuardia's request for competitive bids on Queens household scrap. The Queens drive, first of the New York borough campaigns, yielded more than 15,000 tons of household scrap, an average of almost 28 lb. per person. At the same rate, the entire city would yield more than 100,000,000 lb.

No one, or even several, yards in this vicinity can quickly handle such quantities of unprepared household metal, dealers point out. However, under the mayor's plan, these large tonnages will go to one, or few, dealers who will have to take as long as a year, it is anticipated, to chew up what they bite off. If collected scrap is a long time in reaching the mills, it will not only hurt steel production but, dealers say, cynicism and disgruntlement among the citizens will set in, with little enthusiasm for future drives and a belief that the scrap trade is inept.

Van Deventer Heads N. Y. Scrap Committee

••• J. H. Van Deventer, president and editor of THE IRON AGE, has been appointed chairman of the New York Sales Executive Club's Scrap Salvage Committee, club officials have announced.

The 1000 members of the Sales Executives Club are organizing to promote iron and steel scrap collection in greater New York and will coordinate their efforts with other organizations seeking old metal for the nation's furnaces and foundries.

Names of other members of the committee headed by Mr. Van Deventer have not yet been announced.

Sharp Steel Drop If Scrap Drives Lag, E. T. Weir Asserts

Pittsburgh

••• The shortage of steel scrap is the most serious question confronting the country in the successful prosecution of this war, Mr. E. T. Weir, board chairman, National Steel Corp. told newspapermen here last week. He added that ample steel on the battlefield is more important than manpower in the front lines.

Warning that the situation is serious, Mr. Weir said, "Unless we can greatly stimulate the flow of scrap over what is now coming out, we are going to have a severe loss in steel production this winter."

Mr. Weir said that the collection of scrap was the individual responsibility of every person in the country and added that so far certain people in Washington have failed to realize that scrap is the most vital raw material in the war effort. "Instead of Washington leading the people of this country we seem to be in a position where the people have to force Washington into action," he said. Mr. Weir suggested that in order to completely exploit the scrap lying around the country in homes and farms, some national organization with proper authority to get behind local and state drives should be established.

Mr. Weir admitted that a premature cold spell or an early winter would intensify the effect of the scrap shortage because less ore could be brought down this year than was originally estimated.

Detroit Dealers Will Pay \$11 Per Ton for Public Scrap

Detroit

••• Dealers here agreed to pay \$11 a gross ton for scrap accumulated from households in a voluntary donation drive on Sept. 26.

Originally a \$10 a ton price had been set with the understanding that it might be raised if inspection established justification for

an increase. At a hearing on the price matter, Samuel G. Keywell and M. A. Schlafer, both of the Institute of Scrap Iron & Steel, said that the cost of handling the miscellaneous scrap collected from the homes would run from \$4 to \$6 a ton and that the average price received for it would be around \$14.50 a ton. The dealers said they would take an anticipated average loss of \$1.50 a ton as a contribution to the salvage campaign.

Wayne County, meanwhile, saw its accumulation reach 12,042 tons with an estimated 1200 tons still unweighed. Total collections in Detroit alone came to 9673 tons.

Immediately following the voluntary scrap drive came a campaign to pick up all junker automobiles and send them to automobile graveyards.

Plans Expedited for Industrial Scrap Drive

Detroit

• • • Plans were being expedited this week for the nation-wide dormant scrap drive, to include more than 70,000 American industrial companies, following the recent announcement by Hamilton W. Wright, chief of the Industrial Salvage Section, Conservation Division of the War Production Board.

Letters have been mailed to presidents of the 70,000 companies asking them to thoroughly inspect their plant property and make disposition by the end of the year of obsolete machinery, tools, equipment, dies, jigs, fixtures, etc., which are incapable of current or future use in the war production effort because they are broken, worn out, irreparable, dismantled or in need of unavailable parts necessary to practical reemployment.

Field men of the Industrial Salvage Section or temporary volunteer assistants will call on executives of these companies to help them identify dormant scrap. A field organization of 140 individuals, amplified by approximately 2000 volunteer assistants provided by the steel companies and the American Steel Warehouse Association and the National Federation of Sales Executives will make regular calls on the industrial firms enlisted in the drive between Oct. 1 and Dec. 31.

City Scrap Drives Seen Eliminating Small Junkies

Pittsburgh

• • • Nationwide scrap drives are proving successful, but are putting many scrappies out of business, in the opinion of some market experts here. Recent drives here have forced more than 100 peddlers to seek their livelihood elsewhere. This was because city-owned or donated trucks were used to haul the collected scrap to central piles where dealers were to bid upon it.

It is said that scrap costs on some city collections have run from \$50 to \$100 a ton. Proponents of these drives where the scrappie is not an integral part claim that a lot of scrap is coming out which would not otherwise be collected. These scrap peddlers who have been forced out of business are "lost to the cause" and will not be available later, having gone to other work. The ranks were already thinned out as a result of war jobs and the draft.

Unless a perpetual or continuous plan of drives is set up around the country with a central authority or plan, the lack of these scrappies next spring and later will seriously affect steel production according to opinion here. If, however, air raid wardens are used in drives whereby householders and farms are periodically checked, the loss of the small dealer may be neutralized.

PITTSBURGH—Incoming scrap tonnages are slightly larger here this week, so that some plants have kept from dipping into their stock piles. This was not general, however. As scrap tonnages increase, mills immediately schedule higher steel output which is up fractionally here this week. An attempt is being made to keep the optimistic news of drive successes from causing any letdown in scrap gathering.

CLEVELAND—Heads of local drives have been casting longing eyes on the machine tool users, hoping to find some wedge to break into plants and scrap old machine tools. However, as yet old tools are being used, due to lack of new ones. Some of the machines now in operation were built as long ago as 1916 and 1918. Also, second hand machinery companies have combed most plants for old machines. Local scrap drives are to begin next week. However, the sorting, segregating, bundling, and other handling may cause quite a lag between the time the scrap is received and when it is shipped from the yards. However, in the Cleveland district there are some scrapping projects that will yield a fair quantity

of better types of scrap. A large viaduct, several thousand tons of street car rails and equipment and the proposed scrapping of a bridge will add substantial quantities of a better class of scrap to the pile.

BIRMINGHAM—Large tonnages of metal ranging from chains used in slavery days to large water boilers are being contributed to the scrap drive. That the job of preparing much of the household scrap will be a problem is obvious. The drive is receiving almost unanimous support.

CINCINNATI—Scrap is flowing into dealers' yards faster than the men can handle it. Of course, scrap yard labor forces are not as large as dealers would like. However, the scrap situation has been relieved for at least a short time, and prevented from becoming as desperate as was anticipated.

BOSTON—Inadequate labor is the outstanding yard problem and unless relief comes, additional yards will probably close. Scrap movement to consumers is slightly ahead of a month ago and well ahead of a year ago, however. Shipping of drive-scrap direct to Pennsylvania yards with plenty of equipment and labor may solve the local scrap labor problems.

CHICAGO—The scrap situation here continues very ragged, but scrap yards have been able to keep sufficient scrap moving to permit maintenance of the district's rate at 102.5 per cent for four consecutive weeks. Some slight improvement in the flow of farm scrap is reported and it is expected that soon important tonnages may be available from the mining areas in the west. The public drives are turning out some fair sized tonnages, but the extensive processing that is required for this material is slowing its movement into consumption.

ST. LOUIS—The drive for the St. Louis area's quota of 72,000 tons of scrap for the last quarter of 1942 began with 150,000 school children, whose first day yielded 2500 tons, and the whole city searching out material. The allocation follows: general salvage, homes, etc., 9360 tons; special projects, streetcar rails, abandoned bridges, etc., 11,520 tons; automobile graveyards, 4320 tons, and industrials, 46,800 tons. The city donated 200 tons of iron park fences. Meanwhile receipts to mills are increasing so that inventories need not be used to maintain operations.

PHILADELPHIA—Steel producers and scrap men alike say that the flow of scrap in this area is somewhat improved over last week. This does not mean anything of a permanent nature but does reflect the recent civic scrap activity and represents the efforts of some to dislodge hard-to-get scrap. One steel producer reported that industrial scrap was coming into his yard slightly better this week. However, no person in the area cares to hold out any responsible hope for an adequate scrap supply for the winter. Production here has not been impaired by lack of scrap to date.

SCRAP PRICES

IRON AND STEEL (OTHER THAN RAILROAD) SCRAP

ELECTRIC FURNACE, ACID OPEN HEARTH AND FOUNDRY GRADES

(All Prices Are Per Gross Ton)				Low Phos.		Heavy Structural and Plate			Cut Auto. Steel Scrap			1 ft. and Under and Auto. Springs, and Crank-shafts	Alloy free Low Phos. and Sulphur Turnings	Heavy Axle and Forge Turn. First Cut	Electric Furnace Bundles
BASIC OPEN HEARTH GRADES (No. 1 Heavy Melting; No. 1 Hydr. Com- pressed Black Sheets; No. 2 Heavy Melting; Dealers' No. 1 Bundles; Dealers' No. 2 Bundles; No. 1 Busheling)		Machine Shop Turnings	BLAST FURNACE GRADES (Mixed Borings and Turnings; Shovelling Turnings; No. 2 Busheling; Cast Iron Borings)	Billet, Bloom, Forge and Crops	Bar Crops, Punchings Plate Scrap and Cast Steel	3 ft. and Under	2 ft. and Under	1 ft. and Under	3 ft. and Under	2 ft. and Under	1 ft. and Under				
Pittsburgh, Brackenridge, Butler, Monessen, Midland, Johnstown, Sharon, Canton, Steubenville, Warren, Youngstown, Weirton.....	\$ 20.00	\$16.00	\$16.00	\$25.00	\$22.50	\$21.00	\$21.50	\$22.00	\$20.00	\$20.50	\$21.00	\$18.00	\$19.50	\$21.00	
Cleveland, Middletown, Cincinnati, Portsmouth.....	19.50	15.50	15.50	24.50	22.00	20.50	21.00	21.50	19.50	20.00	20.50	17.50	19.00	20.50	
Chicago, Claymont, Coatesville, Conshohocken, Harrisburg, Phoenixville, Sparrows Pt.....	18.75	14.75	14.75	23.75	21.25	19.75	20.25	20.75	18.75	19.25	19.75	16.75	18.25	19.75	
Ashland, Ky.....	19.50	15.50	15.50	24.50	22.00	20.50	21.00	21.50	19.50	20.00	20.50	17.50	19.00	20.50	
Buffalo, N. Y.....	19.25	15.25	15.25	24.25	21.75	20.25	20.75	21.25	19.25	19.75	20.25	17.25	18.75	20.25	
Bethlehem, Pa.; Kokomo, Ind.....	18.25	14.25	14.25	23.25	20.75	19.25	19.75	20.25	18.25	18.75	19.25	16.25	17.75	19.25	
Duluth, Minn.....	18.00	14.00	14.00	23.00	20.50	19.00	19.50	20.00	18.00	18.50	19.00	16.00	17.50	19.00	
Detroit, Mich.....	17.85	13.85	13.85	22.85	20.35	18.85	19.35	19.85	17.85	18.35	18.85	15.85	17.35	18.85	
Toledo, Ohio.....		13.85	13.85												
St. Louis, Mo.....	17.50	13.50	13.50	22.50	20.00	18.50	19.00	19.50	17.50	18.00	18.50	15.50	17.00	18.50	
Atlanta, Ga.; Alabama City, Ala.; Birmingham, Los Angeles; Pittsburg, Cal.; San Francisco	17.00	13.00	13.00	22.00	19.50	18.00	18.50	19.00	17.00	17.50	18.00	15.00	16.50	18.00	
Minnequa, Colo.....	16.50	12.50	12.50	21.50	19.00	17.50	18.00	18.50	16.50	17.00	17.50	14.50	16.00	17.50	
Seattle, Wash.....	14.50	10.50	10.50	19.50	17.00	15.50	16.00	16.50	14.50	15.00	15.50	12.50	14.00	15.50	

BUNDLES: Tin can bundles are \$4 below dealers' No. 2 bundles; No. 3 bundles are \$2 less than No. 1 heavy melting.

SWITCHING CHARGES: Deductions for shipping points within basing points (cents per gross ton) are: Pittsburgh, Brackenridge, 55c.; Midland, Johnstown, Sharon, Youngstown, Warren, Weirton, Cleveland, Toledo, Los Angeles, San Francisco, 42c.; Butler, Monessen, Canton, Steubenville, Cincinnati*, Portsmouth, Ashland, Coatesville, Harrisburg, Phoenixville, Bethlehem, Kokomo, Duluth, St. Louis, 28c.; Buffalo, Claymont, 36c.; Conshohocken, 11c.; Atlanta, Birmingham, 32c.; Pittsburg, Cal., 42c.; Middletown, 14c.; Sparrow's Point, 11c.; Chicago, 84c.; Detroit, 53c.; Alabama City, 26c.; Minnequa, 22c.; Seattle, 38c.. *At Cincinnati, for basic open hearth grades, cut auto scrap and auto springs and crankshafts, deduct 80c. per ton.

PITTSBURGH basing point includes switching districts of Bessemer, Homestead, Duquesne, Munhall and McKeesport. Cincinnati basing point includes Newport, Ky., switching district. St. Louis includes switching districts of Granite City, East St. Louis, Madison, Ill. San Francisco includes switching districts of S. San Francisco, Niles and Oakland, Cal.

MAXIMUM prices of inferior grades shall continue to bear same differential below corresponding grades as existed during the period Sept. 1, 1940, to Jan. 31, 1941. Superior grades cannot be sold at a premium without approval of OPA. Special preparation charges in excess of the above prices are banned. Whenever any electric furnace or foundry grades are purchased for open hearth or blast furnace use, prices may not exceed the prices above for the corresponding open hearth grades.

MAXIMUM SHIPPING POINT PRICE—Where shipment is by rail or vessel, or by combination of rail and vessel, the scrap is at its shipping point when placed f.o.b. railroad car or f.a.s. vessel. In such cases, the maximum shipping point prices shall be: (a) For shipping points located within a basing point, the price listed in the table above for the scrap at the basing point in which the shipping point is located, minus the lowest established switching charge for scrap within the basing point and (b) for shipping points located outside the basing point, the price in table above at the most favorable basing point minus the lowest transportation charge by rail or water or combination thereof. Dock charge is 75c. a ton*, but 50c. if moved by deck scow or railroad lighter. Shipping by motor vehicle: The scrap is at its shipping point when loaded. For shipping points located within basing points take price listed in table minus applicable switching charge. If located outside a basing point, the price at the most favorable basing point minus lowest established charge for transporting by common carrier. If no established trans-

portation rate exists, the customary costs are deducted. Published dock charges prevail. If unpublished include 75c.* For exceptions see official order.

AT NEW YORK city or Brooklyn, the maximum shipping point price is \$15.33 for No. 1 heavy melting, f.o.b. cars, f.a.s. vessel or loaded on truck. Other grades carry differentials similar to those in table. New Jersey prices must be computed on basis of all-rail. At Boston the maximum is \$15.05 for No. 1 f.o.b. cars, f.a.s. vessel or loaded on trucks. Shipments from a New England shipping point to a consumer outside New England carry maximum transportation charge of \$6.65 per ton.

UNPREPARED SCRAP: For unprepared scrap, maximum prices shall be \$2.50 (and in the case of the material from which No. 1, No. 2, and No. 3 bundles are made \$4) less the maximum prices for the corresponding grade or grades of prepared scrap. In no case, however, shall electric furnace and foundry grades be used as the "corresponding grade or grades of prepared scrap." Converter may charge \$2.50 per ton on consumer-owned unprepared remote scrap (see order).

Maximum price of all scrap in a vehicle is that of the lowest price grade in the shipment. This limitation does not apply to vessel shipments if grades are segregated.

Where scrap is to undergo preparation prior to its arrival at the point of delivery, such scrap is not at its shipping point, as that phrase is defined above, until after preparation has been completed.

CHEMICAL BORINGS: No. 1 (new, clean, containing not more than 1 per cent oil), \$1 less than No. 1 heavy melting; No. 2 (new, clean, containing not more than 1.5 per cent oil), \$2 less than No. 1 heavy melting. If loaded in box cars add 75c.

UNPREPARED CAST IRON SCRAP—Except for heavy breakable cast, unprepared scrap is given a price ceiling of \$2.50 per ton less than the maximum prices for the corresponding grade of prepared cast iron scrap. Where scrap is to undergo preparation prior to arrival at the point of delivery, such scrap is not considered at shipping point until preparation is completed.

Consumers of cast scrap may pay the shipping point price plus established charge for transporting the scrap to their plants. In the case of deliveries by truck, the cast scrap buyer must obtain from the seller a certification, made out to OPA.

*At Memphis 50c.; Great Lakes ports \$1; New England \$1.25.

RAILROAD SCRAP				Scrap Rails			CAST IRON SCRAP			
No. 1 RR Heavy Melting	Scrap Rails	Rails for Rerolling		3 ft. and Under	2 ft. and Under	18 in. and Under	No. 1 cupola cast.....	Group A	Group B	Group C
Cleveland, Cincinnati, Ashland, Portsmouth, Middletown.....	\$20.50	\$21.50	\$23.00	\$23.50	\$23.75	\$24.00	No. 1 machinery cast, drop broken, 150 lbs. and under.....	18.00	19.00	20.00
Canton, Pittsburgh, Sharon, Steubenville, Wheeling, Youngstown.....	21.00	22.00	23.50	24.00	24.25	24.50	Clean auto cast.....	18.00	19.00	20.00
Chicago, Philadelphia, Sparrows Pt., Wilmington, Birmingham, Los Angeles, San Francisco.....	19.75	20.75	22.25	22.75	23.00	23.25	Unstripped motor blocks.....	17.50	18.50	19.50
Buffalo.....	20.25	21.25	22.75	23.25	23.50	23.75	Stove Plate.....	17.00	18.00	19.00
Detroit.....	18.85	19.85	21.35	21.85	22.10	22.35	Heavy Breakable Cast.....	15.50	16.50	17.50
Duluth.....	19.00	20.00	21.50	22.00	22.25	22.50	Charging box size cast.....	17.00	18.00	19.00
Kansas City, Mo.....	17.00	18.00	19.50	20.00	20.25	20.50	Misc. Malleable.....	20.00	21.00	22.00
Kokomo, Ind.....	19.25	20.25	21.75	22.25	22.50	22.75	Group A includes the states of Montana, Idaho, Wyoming, Nevada, Utah, Arizona and New Mexico.			
Seattle.....	15.50	16.50	18.00	18.50	18.75	19.00	Group B includes the states of North Dakota, South Dakota, Nebraska, Colorado, Kansas, Oklahoma, Texas and Florida.			
St. Louis.....	18.50	19.50	21.00	21.50	21.75	22.00	Group C: States not named in A and B; switch district of Kansas City, Kan., Mo.			

... Composite Prices

Advances Over Past Week in Heavy Type; Declines in *Italics*.

(Prices Are F.O.B. Major Basing Points)

Flat Rolled Steel:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Cents Per Lb.)				
Hot rolled sheets.....	2.10	2.10	2.10	2.10
Cold rolled sheets.....	3.05	3.05	3.05	3.05
Galvanized sheets (24 ga.)	3.50	3.50	3.50	3.50
Hot rolled strip.....	2.10	2.10	2.10	2.10
Cold rolled strip.....	2.80	2.80	2.80	2.80
Plates	2.10	2.10	2.10	2.10
Stain's c.r. strip (No. 302)	28.00	28.00	28.00	28.00

Tin and Terne Plate:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Dollars Per Base Box) *				
Tin plate	\$5.00	\$5.00	\$5.00	\$5.00
Special coated mfg. ternes	4.30	4.30	4.30	4.30

Bars and Shapes:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Cents Per Lb.)				
Merchant bars	2.15	2.15	2.15	2.15
Cold finished bars.....	2.65	2.65	2.65	2.65
Alloy bars	2.70	2.70	2.70	2.70
Structural shapes	2.10	2.10	2.10	2.10
Stainless bars (No. 302)	24.00	24.00	24.00	24.00

Wire and Wire Products:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Cents Per Lb.)				
Plain wire	2.60	2.60	2.60	2.60
Wire nails	2.55	2.55	2.55	2.55

Rails:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Dollars Per Gross Ton)				
Heavy rails	\$40.00	\$40.00	\$40.00	\$40.00
Light rails	40.00	40.00	40.00	40.00

Semi-Finished Steel:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Dollars Per Gross Ton)...				
Rerolling billets	\$34.00	\$34.00	\$34.00	\$34.00
Sheet bars	34.00	34.00	34.00	34.00
Slabs	34.00	34.00	34.00	34.00
Forging billets	40.00	40.00	40.00	40.00
Alloy blooms, billets, slabs	54.00	54.00	54.00	54.00

Wire Rods and Skelp:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Cents Per Lb.)				
Wire rods	2.00	2.00	2.00	2.00
Skelp (grvd)	1.90	1.90	1.90	1.90

The various basing points for finished and semi-finished steel are listed in the detailed price tables, pages 172 to 180 herein.

Pig Iron:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Per Gross Ton)				
No. 2 fdy., Philadelphia...	\$25.89	\$25.89	\$25.89	\$25.84
No. 2, Valley furnace...	24.00	24.00	24.00	24.00
No. 2, Southern Cin'ti....	24.68	24.68	24.68	24.06
No. 2, Birmingham.....	20.38	20.38	20.38	20.38
No. 2, foundry, Chicago†	24.00	24.00	24.00	24.00
Basic, del'd eastern Pa...	25.39	25.39	25.39	25.34
Basic, Valley furnace...	23.50	23.50	23.50	23.50
Malleable, Chicago†	24.00	24.00	24.00	24.00
Malleable, Valley	24.00	24.00	24.00	24.00
L. S. charcoal, Chicago...	31.34	31.34	31.34	31.34
Ferromanganese‡	135.00	135.00	135.00	120.00

†The switching charge for delivery to foundries in the Chicago district is 60c. per ton.
‡For carlots at seaboard.

Scrap:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Per Gross Ton)				
Heavy melting steel, P'gh.	\$20.00	\$20.00	\$20.00	\$20.00
Heavy melt'g steel, Phila.	18.75	18.75	18.75	18.75
Heavy melt'g steel, Ch'go	18.75	18.75	18.75	18.75
No. 1 hy. comp. sheet, Det.	17.85	17.85	17.85	17.85
Low phos. plate, Youngs'n	22.50	22.50	22.50	23.00
No. 1 cast, Pittsburgh...	20.00	20.00	20.00	22.00
No. 1 cast, Philadelphia.	20.00	20.00	20.00	24.00
No. 1 cast, Ch'go.....	20.00	20.00	20.00	20.00

Coke, Connellsville:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Per Net Ton at Oven)				
Furnace coke, prompt...	\$6.00	\$6.00	\$6.00	\$6.125
Foundry coke, prompt...	6.875	6.875	6.875	6.875

Non-Ferrous Metals:	Oct. 6, 1942	Sept. 29, 1942	Sept. 8, 1942	Oct. 7, 1941
(Cents per Lb. to Large Buyers)				
Copper, electro., Conn...	12.00	12.06	12.00	12.00
Copper, Lake, New York	12.00	12.00	12.00	12.00
Tin (Straits), New York	52.00	52.00	52.00	52.00
Zinc, East St. Louis.....	8.25	8.25	8.25	7.25
Lead, St. Louis.....	6.35	6.35	6.35	5.70
Antimony (Asiatic), N. Y.	16.50	16.50	16.50	16.50

... Comparison of Prices

FINISHED STEEL	
Oct. 6, 1942	2.30467c. a Lb.....
One week ago.....	2.30467c. a Lb.....
One month ago.....	2.30467c. a Lb.....
One year ago.....	2.30467c. a Lb.....

	HIGH	LOW
1942.....	2.30467c.,	2.30467c.,
1941.....	2.30467c.,	2.30467c.,
1940.....	2.30467c., Jan. 2	2.24107c., Apr. 16
1939.....	2.35367c., Jan. 3	2.26689c., May 16
1938.....	2.58414c., Jan. 4	2.27207c., Oct. 18
1937.....	2.58414c., Mar. 9	2.32263c., Jan. 4
1936.....	2.32263c., Dec. 28	2.05200c., Mar. 10
1935.....	2.07642c., Oct. 1	2.06492c., Jan. 8
1934.....	2.15367c., Apr. 24	1.95757c., Jan. 2
1933.....	1.95578c., Oct. 3	1.75836c., May 2
1932.....	1.89196c., July 5	1.83901c., Mar. 1
1931.....	1.99629c., Jan. 13	1.86586c., Dec. 29
1930.....	2.25488c., Jan. 7	1.97319c., Dec. 9
1929.....	2.31773c., May 28	2.26498c., Oct. 29

Weighted index based on steel bars, beams, tank plates, wire, rails, black pipe, hot and cold-rolled sheets and strip, representing 78 per cent of the United States output. Index recapitulated in Aug. 28, 1941, issue.

PIG IRON	
.....	23.61 a Gross Ton.....
.....	23.61 a Gross Ton.....
.....	23.61 a Gross Ton.....
.....	23.61 a Gross Ton.....

	HIGH	LOW
.....	\$23.61	\$23.61
23.61, Mar. 20	23.45, Jan. 2	
23.45, Dec. 23	22.61, Jan. 2	
22.61, Sept. 19	20.61, Sept. 12	
23.25, June 21	19.61, July 6	
23.25, Mar. 9	20.25, Feb. 16	
19.74, Nov. 24	18.73, Aug. 11	
18.84, Nov. 5	17.83, May 14	
17.90, May 1	16.90, Jan. 27	
16.90, Dec. 5	13.56, Jan. 3	
14.81, Jan. 5	13.56, Dec. 6	
15.90, Jan. 6	14.79, Dec. 15	
18.21, Jan. 7	15.90, Dec. 16	
18.71, May 14	18.21, Dec. 17	

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Southern iron at Cincinnati.

SCRAP STEEL	
.....	\$19.17 a Gross Ton.....
.....	\$19.17 a Gross Ton.....
.....	\$19.17 a Gross Ton.....
.....	\$19.17 a Gross Ton.....

	HIGH	LOW
.....	\$19.17	\$19.17
\$22.00, Jan. 7	\$19.17, Apr. 10	
21.83, Dec. 30	16.04, Apr. 9	
22.50, Oct. 3	14.08, May 16	
15.00, Nov. 22	11.00, June 7	
21.92, Mar. 30	12.92, Nov. 10	
17.75, Dec. 21	12.67, June 9	
13.42, Dec. 10	10.33, Apr. 29	
13.00, Mar. 13	9.50, Sept. 25	
12.25, Aug. 8	6.75, Jan. 3	
8.50, Jan. 12	6.43, July 5	
11.33, Jan. 6	8.50, Dec. 29	
15.00, Feb. 18	11.25, Dec. 9	
17.58, Jan. 29	14.08, Dec. 3	

Based on No. 1 heavy melting steel scrap quotations to consumers at Pittsburgh, Philadelphia and Chicago.

Prices of Finished Iron and Steel . . .

Steel prices shown here are f.o.b. basing points, in cents per lb., unless otherwise indicated. On some products either quantity deductions or quantity extras apply. In many cases gage, width, cutting, physical, chemical extras, etc., apply to the base price. Actual realized prices to the mill, therefore, are affected by extras, deductions, and in most cases freight absorbed to meet competition.

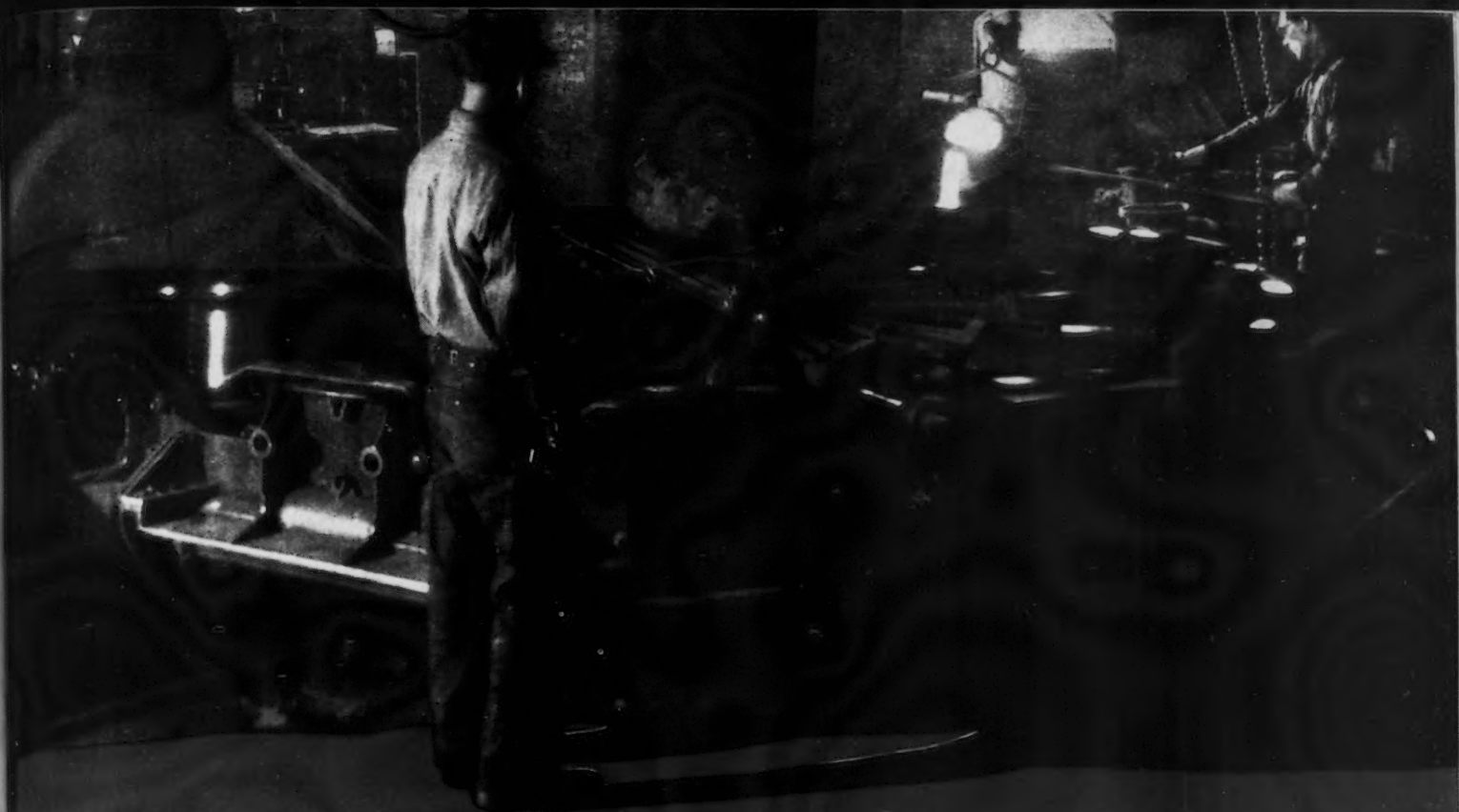
Basing Point ↓ Product													10 DELIVERED TO				
	Pitts- burgh	Chicago	Gary	Cleve- land	Birm- ingham	Buffalo	Youngs- town	Spar- rows Point	Granite City	Middle- town, Ohio	Gulf Ports, Cars	Pacific Ports, Cars	Detroit	New York	Phila- delphia		
SHEETS																	
Hot rolled	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢	2.20¢	2.10¢		2.65¢	2.22¢	2.35¢	2.28¢		
Cold rolled ¹	3.05¢	3.05¢	3.05¢	3.05¢		3.05¢	3.05¢		3.15¢	3.05¢		3.70¢	3.17¢	3.41¢	3.39¢		
Galvanized (24 ga.)	3.50¢	3.50¢	3.50¢		3.50¢	3.50¢	3.50¢	3.50¢	3.60¢	3.50¢		4.05¢		3.75¢	3.68¢		
Enameling (20 ga.)	3.35¢	3.35¢	3.35¢	3.35¢			3.35¢		3.45¢	3.35¢		4.00¢	3.47¢	3.73¢	3.69¢		
Long ternes ²	3.80¢		3.80¢									4.55¢		4.18¢	4.14¢		
STRIP																	
Hot rolled ³	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢			2.10¢		2.75¢	2.22¢	2.48¢			
Cold rolled ⁴	2.80¢	2.90¢		2.80¢			2.80¢	(Worcester = 3.00¢)					2.92¢	3.18¢			
Cooperage stock	2.20¢	2.20¢			2.20¢		2.20¢							2.58¢			
Commodity C-R	2.95¢			2.95¢			2.95¢	(Worcester = 3.35¢)					3.07¢	3.33¢			
TIN PLATE																	
Standard cokes, base box	\$5.00	\$5.00	\$5.00						\$5.10					5.38¢	5.34¢		
BLACK PLATE																	
29 gage ⁵	3.05¢	3.05¢	3.05¢						3.15¢			13 4.05¢			3.39¢		
TERNES, M'FG																	
Special coated, base box	\$4.30	\$4.30	\$4.30						\$4.40								
BARS																	
Carbon steel	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢		(Duluth = 2.25¢)			2.52¢	2.80¢	2.27¢	2.51¢	2.49¢		
Rail steel ⁶	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢					2.52¢	2.80¢					
Reinforcing (billet) ⁷	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢			2.52¢	2.55¢ ¹⁴	2.27¢	2.40¢			
Reinforcing (rail) ⁷	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢	2.15¢				2.52¢	2.55¢ ¹⁴	2.27¢		2.49¢		
Cold finished ⁸	2.65¢	2.65¢	2.65¢	2.65¢		2.65¢			(Detroit = 2.70¢)					3.01¢	2.99¢		
Alloy, hot rolled	2.70¢	2.70¢				2.70¢		(Bethlehem, Massillon, Canton = 2.70¢)					2.82¢				
Alloy, cold drawn	3.35¢	3.35¢	3.35¢	3.35¢		3.35¢							3.47¢				
								(Coatesville and Claymont = 2.10¢)									
PLATES																	
Carbon steel	2.10¢	2.10¢	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢	2.25¢ ¹¹		2.47¢	2.65¢	2.33¢	2.30¢	2.155¢		
Wrought iron	3.80¢																
Floor plates	3.35¢	3.35¢									3.72¢	4.00¢		3.73¢	3.69¢		
Alloy	3.50¢	3.50¢					(Coatesville = 3.50¢)				3.97¢	4.15¢		3.71¢	3.60¢		
SHAPES																	
Structural	2.10¢	2.10¢	2.10¢		2.10¢	2.10¢		(Bethlehem = 2.10¢)			2.47¢	2.75¢		2.28¢	2.22¢		
SPRING STEEL, C-R																	
0.26 to 0.50 Carbon	2.80¢			2.80¢				(Worcester = 3.00¢)									
0.51 to 0.75 Carbon	4.30¢			4.30¢				(Worcester = 4.50¢)									
0.76 to 1.00 Carbon	6.15¢			6.15¢				(Worcester = 6.35¢)									
1.01 to 1.25 Carbon	8.35¢			8.35¢				(Worcester = 8.55¢)									
WIRE⁹																	
Bright ¹⁵	2.60¢	2.60¢		2.60¢	2.60¢			(Worcester = 2.70¢)				3.10¢			2.94¢		
Galvanized								add proper size extra and galvanized extra to bright wire base, above.									
Spring (High Carbon)	3.20¢	3.20¢		3.20¢				(Worcester = 3.30¢)				3.70¢			3.54¢		
PILING																	
Steel sheet	2.40¢	2.40¢				2.40¢						2.95¢			2.74¢		
IRON BARS¹²																	
Wrought single refined	4.40¢																
Wrought double refined	5.40¢																

¹ Mill run sheets are 10c. per 100 lb. less than base; and primes only, 25c. above base. ² Unassorted 8-lb. coating. ³ Widths up to 12 in. ⁴ Carbon 0.25 per cent and less. ⁵ Applies to certain width and length limitations. ⁶ For merchant trade. ⁷ Prices for straight length material only, from a producer to a consumer. Functional discount of 25c. per 100 lb. to fabricators. ⁸ Also shafting. For quantities of 20,000 to 39,999 lb. ⁹ Carload lot to manufacturing trade. ¹⁰ These prices do not apply if the customary means of transportation (rail and water) are not used. ¹¹ Ship plates only. ¹² Common iron bars quoted at 2.15c. by Terre Haute, Ind., producer. ¹³ Boxed. ¹⁴ Portland and Seattle price, San Francisco price is 2.50c. ¹⁵ This bright wire base price to be used in figuring annealed and bright finish wires, commercial spring wire and galvanized wire.

GOVERNMENT CEILINGS—Price Schedule No. 6 issued April 16, 1941, governs steel mill prices; Price Schedule No. 49 governs warehouse prices, which are on another page of this issue.

EXCEPTIONS TO PRICE SCHEDULE NO. 6—On hot rolled carbon bars, Phoenix Iron Co. may quote 2.35c. at established basing points; Calumet Steel division of Borg Warner may quote 2.35c., Chicago, on bars from its 8-in. mill; Joslyn Mfg. Co. may quote 2.35c., Chicago base. On rail steel bars Sweets Steel Co. may quote 2.33c., f.o.b. mill. On hot rolled sheets, Andrews Steel Co. may quote for shipment to Detroit area on Middletown base. On galvanized sheets, Andrews Steel may quote 3.75c. at established basing points. On hot rolled strip, Joslyn Mfg. Co. may quote 2.30c., Chicago base. On plates, Granite City Steel Co. may quote 2.35c., f.o.b. mill, and Central Iron & Steel Co. may quote 2.20c., f.o.b. basing points. On shapes, Phoenix Iron Co. may quote 2.30c. established basing points and 2.50c. Phoenixville for export.

On rail steel merchant bars, Eckels-Nye Corp. may charge 2.40c. On tubing, South Chester Tube Co. may price Gulf or Pacific Coast all-rail shipments and shipments west of Harrisburg on basis of f.o.b. Chester. On lend-lease sales to eastern seaboard, Sheffield Steel Co. and Colorado Fuel & Iron Corp. may sell f.o.b. mill. SEMIFINISHED STEEL—Follansbee Steel Corp. may sell forging billets at \$49.50 f.o.b. Toronto; Continental Steel Corp. may sell Acme Steel Co. at \$34 for rerolling billets plus extras and freight; Ford Motor Co. may sell rerolling billets at \$34 f.o.b. Dearborn; Andrews Steel Co. may sell forging billets at \$50 at established basing points and slabs at \$41; Empire Sheet and Tin Plate may sell slabs at \$41 at established basing points and sheet bars at \$39 f.o.b. mill; on lend-lease sales Northwestern Steel & Wire Co. may charge \$41 per gross ton f.o.b. mill for rerolling billets; on lend-lease sales Wheeling Steel Corp. may charge \$36 per ton for small billets, f.o.b. Portsmouth and \$37 per ton for sheet bars, f.o.b. Portsmouth; Laclede Steel Co. on semifinished sales for lend-lease shipped to eastern seaboard may use Chicago basing point prices f.o.b. Alton and Madison, Ill. ALLOY STEEL BARS—Texas Steel Co. may use Chicago base f.o.b. Worth.



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**Use castings of EATON PERMANENT MOLD IRON!
They give you *four* advantages!**

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3. PERMANENT MOLD IRON is a lower base cost material.

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EATON MANUFACTURING COMPANY

Foundry Division

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PRICES

SEMI-FINISHED STEEL

Billets, Blooms and Slabs

Pittsburgh, Chicago, Gary, Cleveland, Youngstown, Buffalo, Birmingham, Sparrows Point (rerolling only). Prices delivered Detroit are \$2.25 higher; f.o.b. Duluth, billets only, \$2 higher.

Per Gross Ton

Rerolling \$34.00
Forging quality 40.00

Shell Steel

Per Gross Ton

3 in. to 12 in. \$52.00
12 in. to 18 in. 54.00
18 in. and over 56.00
Basic open hearth shell steel, f.o.b. Pittsburgh, Chicago, Buffalo, Gary, Cleveland, Youngstown and Birmingham.
Prices delivered Detroit are \$2.25 higher.

Note: The above base prices apply on lots of 1000 tons of a size and section to which are to be added extras for chemical requirements, cutting to length, or quantity.

Sheet Bars

Pittsburgh, Chicago, Cleveland, Youngstown, Buffalo, Canton, Sparrows Point, Md.

Per Gross Ton

Open hearth or bessemer \$34.00

Skelp

Pittsburgh, Chicago, Youngstown, Coatesville, Pa., Sparrows Point, Md.

Per Lb.

Grooved, universal and sheared .. 1.90c.

Wire Rods

(No. 5 to 9/32 in.)

Per Lb.

Pittsburgh, Chicago, Cleveland ... 2.00c.
Worcester, Mass. 2.10c.
Birmingham 2.00c.
San Francisco 2.50c.
Galveston 2.25c.

9/32 in. to 47/64 in., 0.15c. a lb. higher. Quantity extras apply.

Alloy Steel Blooms, Billets and Slabs

Pittsburgh, Chicago, Canton, Massillon, Buffalo, or Bethlehem, per gross ton \$54.00

TOOL STEEL

(F.o.b. Pittsburgh, Bethlehem, Syracuse) Base per Lb.

High speed 67c.
Straight molybdenum 54c.
Tungsten-molybdenum 57 1/2c.
High-carbon-chromium 43c.
Oil hardening 24c.
Special carbon 22c.
Extra carbon 18c.
Regular carbon 14c.

Warehouse prices east of Mississippi are 2c. a lb. higher; west of Mississippi, 3c. higher.

CORROSION AND HEAT-RESISTING STEEL

(Per lb. base price, f.o.b. Pittsburgh)

Chromium-Nickel Alloys

No. 304 No. 302
Forging billets 21.25c. 20.10c.
Bars 25.00c. 21.00c.
Plates 29.00c. 27.00c.
Structural shapes 25.00c. 21.00c.
Sheets 36.00c. 31.00c.
Hot rolled strip 23.50c. 21.50c.
Cold rolled strip 30.00c. 28.00c.
Drawn wire 25.00c. 24.00c.

Straight-Chromium Alloys

No. 410 No. 430 No. 442 No. 446
F. Billets 15.72c. 16.15c. 19.12c. 23.37c.
Bars 18.50c. 19.00c. 22.50c. 27.50c.
Plates 21.50c. 22.00c. 25.50c. 30.50c.
Sheets 26.50c. 29.00c. 32.50c. 36.50c.
Hotstrip 17.00c. 17.50c. 21.00c. 35.00c.
Cold st. 22.00c. 22.50c. 32.00c. 52.00c.

Chromium-Nickel Clad Steel (20%)

No. 304
Plates 18.00c.
Sheets 19.00c.

*Includes annealing and pickling.

PIG IRON

All prices set in bold face type are maxima established by OPA on June 24, 1941. Other domestic prices (in italics) are delivered quotations per gross ton computed on the basis of the official maxima

	No. 2 Foundry	Basic	Bessemer	Malleable	Low Phosphorus	Charcoal
Boston††	\$25.53	\$25.03	\$26.53	\$26.03		
Brooklyn	27.65			28.15		
Jersey City	26.62	26.12	27.62	27.12		
Philadelphia	25.89	25.39	26.89	26.39		
Bethlehem, Pa.	\$25.00	\$24.50	\$26.00	\$25.50		
Everett, Mass.††	25.00	24.50	26.00	25.50		
Swedeland, Pa.	25.00	24.50	26.00	25.50		
Steelton, Pa.	25.00	24.50				
Birdsboro, Pa.	25.00	24.50	26.00	25.50	\$29.50	
Sparrows Point, Md.	25.00	24.50			29.50	
Erie, Pa.	24.00	23.50	25.00	24.50		
Neville Island, Pa.	24.00	23.50	24.50	24.00		
Sharpville, Pa.	24.00	23.50	24.50	24.00		
Buffalo	24.00	23.00	25.00	24.50	29.50	
Cincinnati	24.68	24.68		25.18		
Canton, Ohio	25.47	24.97	25.97	25.47		
Mansfield, Ohio	26.06	25.56	26.56	26.06		
St. Louis	24.50	24.00				
Chicago	24.00	23.50	24.50	24.00		
Granite City, Ill.	24.00	23.50	24.50	24.00		
Cleveland	24.00	23.50	24.50	24.00		
Hamilton, Ohio	24.00	23.50		24.00		
Toledo	24.00	23.50	24.50	24.00		
Youngstown*	24.00	23.50	24.50	24.00		
Detroit	24.00	23.50	24.50	24.00		
Lake Superior fc.						\$28.00
Lyles, Tenn. fc.†						33.00
St. Paul	26.76		27.26	26.76		
Duluth	24.50		25.00	24.50		
Birmingham	20.38	19.00	25.00			
Los Angeles	27.25					
San Francisco	27.25					
Seattle	27.25					
Provo, Utah	22.00					
Montreal	27.50	27.50		28.00		
Toronto	25.50	25.50		26.00		

GRAY FORGE IRON: Valley or Pittsburgh furnace \$23.50

*Pittsburgh Coke & Iron Co. (Sharpville, Pa. furnace only) and the Struthers Iron and Steel Co., Struthers, Ohio, may charge 50c. a ton in excess of basing point prices for No. 2 foundry, basic, bessemer and malleable.

**Pittsburgh Ferromanganese Co. (Chester furnace only) may charge \$2.25 a ton over maximum basing point prices.

†Price shown is for low-phosphorous iron; high-phosphorous sells for \$28.50 at the furnace.

††Eastern Gas & Fuel Associates, Boston, is permitted to sell pig iron produced by its selling company, Mystic Iron Works, Everett, Mass., at \$1 per gross ton above maximum prices.

Switching Charges: Basing point prices are subject to an additional charge for delivery within the switching limits of the respective districts.

Silicon Differentials: Basing point prices are subject to an additional charge not to exceed 50c. a ton for each 0.25 per cent silicon content in excess of base grade (1.75 per cent to 2.25 per cent).

Phosphorous Differential: Basing point prices are subject to a reduction of 38c. per ton for phosphorous content of 0.70 per cent and over.

Manganese Differentials: Basing point prices are subject to an additional charge not to exceed 50c. a ton for each 0.50 per cent manganese content in excess of 1.00 per cent.

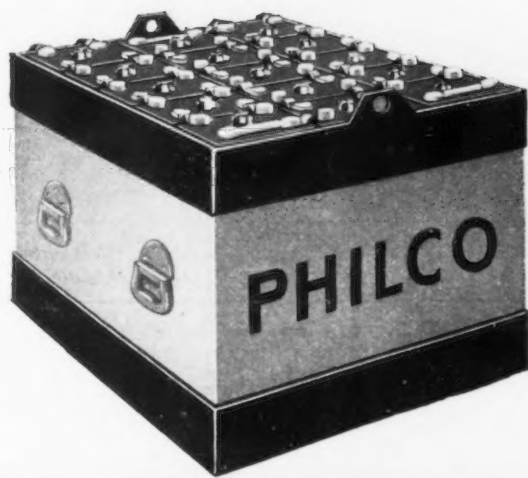
NATIONAL EMERGENCY STEELS (Hot Rolled)

Extras for Alloy Content

Designation	CHEMICAL COMPOSITION LIMITS, PER CENT										Basic Open-Hearth		Electric Furnace	
	Carbon	Manganese	Phosphorus Max.	Sulphur Max.	Silicon	Nickel	Chromium	Molybdenum	Vanadium		Bars & Bar-Strip	Billets, Blooms, & Slabs	Bars & Bar-Strip	Billets, Blooms, & Slabs
NE 8024	.22/.28	1.00/1.30	.040	.040	.20/.35			.10/.20		.45c	\$ 9.00		.95c	\$19.00
NE 8124	.22/.28	1.30/1.60	.040	.040	.20/.35			.25/.35		.85	17.00		1.35	27.00
NE 8233	.30/.36	1.30/1.60	.040	.040	.20/.35			.10/.20		.65	13.00		1.15	23.00
NE 8245	.42/.49	1.30/1.60	.040	.040	.20/.35			.10/.20		.65	13.00		1.15	23.00
NE 8339	.35/.42	1.30/1.60	.040	.040	.20/.35			.20/.30		.75	15.00		1.25	25.00
NE 8442	.38/.45	1.30/1.60	.040	.040	.20/.35			.30/.40		.90	18.00		1.40	28.00
NE 8447	.43/.50	1.30/1.60	.040	.040	.20/.35			.30/.40		.90	18.00		1.40	28.00
NE 8547	.43/.50	1.30/1.60	.040	.040	.20/.35			.40/.60		1.25	25.00		1.75	35.00
NE 8620	.18/.23	.70/.95	.040	.040	.20/.35	.40/.60	.40/.60	.15/.25		.75	15.00		1.25	25.00
NE 8630	.27/.33	.70/.95	.040	.040	.20/.35	.40/.60	.40/.60	.15/.25		.75	15.00		1.25	25.00
NE 8724	.22/.28	.70/.95	.040	.040	.20/.35	.40/.60	.40/.60	.20/.30		.80	16.00		1.30	26.00
NE 8739	.35/.42	.75/1.00	.040	.040	.20/.35	.40/.60	.40/.60	.20/.30		.80	16.00		1.30	26.00
NE 8744	.40/.47	.75/1.00	.040	.040	.20/.35	.40/.60	.40/.60	.20/.30		.80	16.00		1.30	26.00
NE 8749	.45/.52	.75/1.00	.040	.040	.20/.35	.40/.60	.40/.60	.20/.30		.80	16.00		1.30	26.00
NE 8817	.15/.20	.70/.95	.040	.040	.20/.35	.40/.60	.40/.60	.30/.40		.90	18.00		1.40	28.00
NE 8949	.45/.52	1.00/1.30	.040	.040	.20/.35	.40/.60	.40/.60	.30/.40		1.20	24.00		1.70	34.00

Note: The extras shown above are in addition to a base price of 2.70¢ per 100 lb. on finished products and \$54. per gross ton on semi-finished steel major basing points and are in cents per 100 lb. and dollars per gross ton in semi-finished.

IMPORTANT NEWS FOR USERS OF INDUSTRIAL STORAGE BATTERIES



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ARKANSAS: Little Rock	FLORIDA: Jacksonville Miami Panama Tampa	IOWA: Burlington Davenport Des Moines Sioux City	MASSACHUSETTS: Boston	NEVADA: Reno	OHIO: Cleveland Cincinnati Columbus Toledo Youngstown	RHODE ISLAND: Providence	VERMONT: Burlington
CALIFORNIA: Long Beach Los Angeles Fresno San Diego San Francisco Santa Barbara	GEORGIA: Albany Atlanta Savannah	KANSAS: Burlington Wichita	MICHIGAN: Detroit Grand Rapids	NEW JERSEY: Trenton	OKLAHOMA: Oklahoma City	TENNESSEE: Chattanooga Knoxville Memphis Nashville	VIRGINIA: Danville Richmond
COLORADO: Denver	IDAHO: Boise	KENTUCKY: Harlan Hazard Louisville	MINNESOTA: Minneapolis Slayton Thief River Falls	NEW YORK: Albany Buffalo Middletown New York Plattsburg Rochester Syracuse	OREGON: Portland	TEXAS: Dallas El Paso Fort Worth Houston	WASHINGTON: Seattle Spokane
CONNECTICUT: Hartford	ILLINOIS: Chicago Decatur Peoria Quincy	LOUISIANA: Lafayette New Orleans Shreveport	MISSISSIPPI: Jackson	MISSOURI: Joplin Kansas City St. Louis	PENNSYLVANIA: Allentown Altoona Erie	WEST VIRGINIA: Bluefield Clarksburg Huntington	WISCONSIN: Milwaukee
				NORTH CAROLINA: Charlotte		WYOMING: Casper	

FOR FAST INDUSTRIAL BATTERY SERVICE, CALL YOUR PHILCO SALES AGENT!

PRICES

ELECTRICAL SHEETS

(Base, f.o.b. Pittsburgh)

	Per Lb.
Field grade	3.20c.
Armature	3.55c.
Electrical	4.05c.
Motor	4.95c.
Dynamo	5.65c.
Transformer 72	6.15c.
Transformer 65	7.15c.
Transformer 58	7.65c.
Transformer 52	8.45c.

F.o.b. Granite City, add 10c. per 100 lb. on field grade to and including dynamo. Pacific ports add 75c. per 100 lb. on all grades.

WIRE PRODUCTS

To the trade, f.o.b. Pittsburgh, Chicago, Cleveland, Birmingham

	Base per Keg
Standard wire nails	\$2.55
Coated nails	2.55
Outnails, carloads	3.85
	Base per 100 Lb.
Annealed fence wire	\$3.05
Annealed galvanized fence wire	3.40
	Base Column
Woven wire fence*	67
Fence posts (carloads)	69
Single loop bale ties	59
Galvanized barbed wire†	70
Twisted barbless wire	70

*15 1/2 gage and heavier. †On 80-rod spools in carload quantities.

ROOFING TERNE PLATE

(F.o.b. Pittsburgh, per

Package of 112 Sheets)

	20x14 in.	20x28 in.
8-lb. coating I.C.	\$6.00	\$12.00
15-lb. coating I.C.	7.00	14.00
20-lb. coating I.C.	7.50	15.00
25-lb. coating I.C.	8.00	16.00
30-lb. coating I.C.	8.63	17.25
40-lb. coating I.C.	9.75	19.50

BOLTS, NUTS, RIVETS, SET SCREWS

Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent off List

Machine and Carriage Bolts:

1/2 in. & smaller x 6 in. & shorter	65 1/2
9/16 & 5/8 in. x 6 in. & shorter	63 1/2
3/4 to 1 in. x 6 in. & shorter	61
1 1/4 in. and larger, all length	59
All diameters over 6 in. long	59
Lag, all sizes	62
Flow bolts	65

Nuts, Cold Punched or Hot Pressed:

	(Hexagon or Square)
1/2 in. and smaller	62
9/16 to 1 in. inclusive	59
1 1/4 to 1 1/2 in. inclusive	57
1 5/8 in. and larger	56

On above bolts and nuts, excepting plow bolts, additional allowance of 10 per cent for full container quantities. There is an additional 5 per cent allowance for carload shipments.

Semi-Fin. Hexagon Nuts

	U.S.S.	S.A.E.
7/16 in. and smaller	64	64
1/2 in. and smaller	62	62
1/2 in. through 1 in.	60	60
9/16 to 1 in.	59	59
1 1/4 in. through 1 1/2 in.	57	58
1 5/8 in. and larger	56	56

In full container lots, 10 per cent additional discount.

Stove bolts, packages, nuts loose

	71 and 10
Stove bolts in packages, with nuts attached	71
Stove bolts in bulk	80

On stove bolts freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago, New York on lots of 200 lb. or over.

Large Rivets (1/2 in. and larger)

	Base per 100 Lb.
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	\$3.75

Small Rivets (7/16 in. and smaller)

	Per Cent Off List
F.o.b. Pittsburgh, Cleveland, Chicago, Birmingham	65 and 5

Cap and Set Screws

	Per Cent Off List
Upset full fin. hexagon head cap screws, coarse or fine thread, up to and incl. 1 in. x 6 in.	64
Upset set screws, cup and oval points	71
Milled studs	46
Flat head cap screws, listed sizes	36
Fillister head cap, listed sizes	51

Freight allowed up to 65c. per 100 lb. based on Cleveland, Chicago or New York on lots of 200 lb. or over.

PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

(F.o.b. Pittsburgh only on wrought pipe)

Base Price—\$200 per Net Ton

Steel (Butt Weld)

	Black	Galv.
1/2 in.	63 1/2	51
3/4 in.	66 1/2	55
1 to 3 in.	68 1/2	57 1/2

Wrought Iron (Butt Weld)

1/2 in.	24	3 1/2
3/4 in.	30	10
1 and 1 1/4 in.	34	16
1 1/2 in.	38	18 1/2
2 in.	37 1/2	18

Steel (Lap Weld)

2 in.	61	49 1/2
2 1/2 and 3 in.	64	52 1/2
3 1/2 to 6 in.	66	54 1/2

Wrought Iron (Lap Weld)

2 in.	30 1/2	12
2 1/2 to 3 1/2 in.	31 1/2	14 1/2
4 in.	33 1/2	18
4 1/2 to 8 in.	32 1/2	17

Steel (Butt, extra strong, plain ends)

	Black	Galv.
1/2 in.	61 1/2	50 1/2
3/4 in.	65 1/2	54 1/2
1 to 3 in.	67	57

Wrought Iron (Same as Above)

1/2 in.	25	6
3/4 in.	31	12
1 to 2 in.	38	19 1/2

Steel (Lap, extra strong, plain ends)

2 in.	59	48 1/2
2 1/2 and 3 in.	63	52 1/2
3 1/2 to 6 in.	66 1/2	56

Wrought Iron (Same as Above)

2 in.	33 1/2	15 1/2
2 1/2 to 4 in.	39	22 1/2
4 1/2 to 6 in.	37 1/2	21

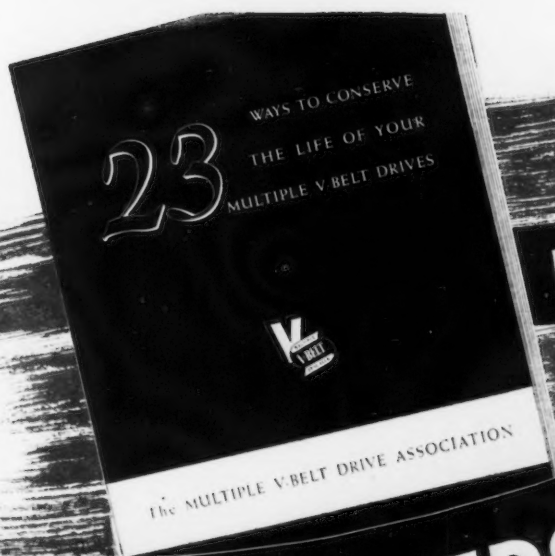
On butt weld and lap weld steel pipe jobbers are granted a discount of 5%. On less-than-carload shipments prices are determined by adding 25 and 30% and the carload freight rate to the base card.

F.o.b. Gary prices are two points lower discount or \$4 a ton higher than Pittsburgh or Lorain on lap weld and one point lower discount, or \$2 a ton higher on all butt weld.

WAREHOUSE PRICES (Delivered Metropolitan areas, per 100 lb. These prices do not necessarily apply for dislocated tonnage shipments when the f.o.b. City prices are used in conformance with OPA Schedule 49)

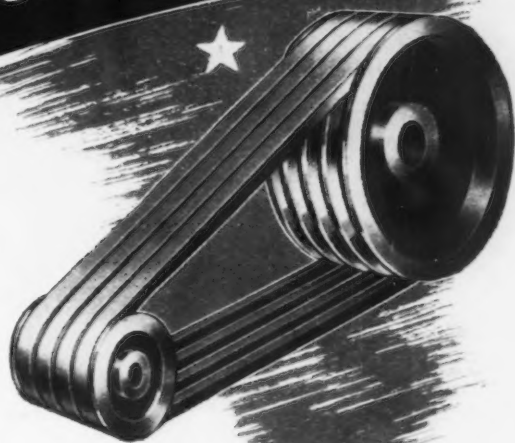
CITIES	SHEETS			STRIP		Plates (1/4 in. and heavier)	Structural Shapes	BARS		ALLOY BARS			
	Hot Rolled (10 ga.)	Cold Rolled	Galv. (24 ga.)	Hot Rolled	Cold Rolled			Hot Rolled	Cold Finished	Hot Rolled 2300	Hot Rolled 3100	Cold Drawn 2300	Cold Drawn 3100
Pittsburgh	\$3.35		\$4.65	\$3.60	\$3.20	\$3.40	\$3.40	\$3.35	\$3.65	\$7.45	\$5.75	\$8.40	\$8.75
Chicago	3.25	4.10	4.85 ¹	3.60	3.50	3.55	3.55	3.50	3.75	7.35	5.65	8.40	6.75
Cleveland	3.35	4.05	4.62	3.50	3.20	3.40	3.58	3.25	3.75	7.55	5.85	8.40	6.75
Philadelphia	3.55	4.05 ⁵	4.65	3.51	3.31	3.55	3.55	3.85	4.06	7.31	5.86	8.56	7.16
New York	3.58	4.60 ²	5.00	3.96 ⁶	3.51	3.76	3.75	3.84	4.09	7.60	5.90	8.84	7.19
Detroit	3.43	4.30	4.84 ¹	3.68 [*]	3.40	3.60	3.65	3.43	3.80	7.67	5.97	8.70	7.05
Buffalo	3.25	4.30 ¹	4.75 ⁴	3.82	3.52	3.62	3.40	3.35	3.75	7.35	5.65	8.40	6.75
Boston	3.71	4.68	5.11	4.06	3.46	3.85	3.85	3.98	4.13	7.75	6.05	8.88	7.23
Birmingham	3.45 ³		4.75 ¹	3.70 ³		3.55 ³	3.55 ³	3.50 ³	4.48				
St. Louis	3.39	4.24 ²	4.99 ¹	3.74	3.61	3.69	3.69	3.64	4.02	7.72	6.02	8.77	7.12
St. Paul	3.50	4.35	5.00	3.85	3.83	3.80	3.80	3.75	4.34	7.45	6.00	8.84	7.44
Milwaukee	3.38	4.23 ²	4.98 ¹	3.73	3.54	3.68	3.68	3.83	3.88	7.58	5.88	8.63	6.98
Baltimore	3.50		5.05	4.00		3.70	3.70	3.85	4.04				
Cincinnati	3.42	4.37 ²	4.42 ¹	3.67	3.45	3.65	3.68	3.60	4.00	7.69	5.99	8.50	7.10
Norfolk	3.85		5.40	4.10		4.05	4.05	4.00	4.15				
Washington	3.60			4.10		3.80	3.80	3.95	4.10				
Indianapolis	3.45	4.25	5.01 ¹	3.75	3.28	3.70	3.70	3.60	3.97	7.67	5.97	8.72	7.07
Omaha	3.85		5.52 ¹	4.20		4.15	4.15	4.10	4.42				
Memphis	3.85		5.25	4.10		3.95	3.95	3.90	4.31				
New Orleans	4.05			4.30		3.90	3.90	4.10	4.60				
Houston	4.00			4.30		4.05	4.05	3.75					
Los Angeles †	4.95	7.15	5.95	4.90		4.90	4.60	4.35	6.60	9.55	8.55	10.55	9.55
San Francisco †	4.55	7.05	6.10	4.50		4.65	4.35	3.95	6.80	9.80	8.80	10.80	9.80
Seattle †	4.65 ⁷		5.70 ⁷	4.25		4.75	4.45	4.20	5.75		9.00		

BASE QUANTITIES: Hot rolled sheets, cold rolled sheets, hot rolled strip, plates, shanes and hot rolled bars, 400 to 1999 lb., galvanized sheets, 150 to 1499 lb.; cold rolled strip, extras apply on all quantities: cold finished bars, 1500 lb. and over; SAE bars, 1000 lb. and over. Exceptions: ¹ 500 to 1499 lb. ² 400 to 1499 lb. ³ 400 to 3999 lb. ⁴ 450 to 1499 lb. ⁵ 1000 to 1999 lb. ⁶ 0 to 1999 lb. ⁷ 300 to 10,000 lb. At Philadelphia galvanized sheets, 25 or more bundles: Boston, cold rolled and galvanized sheets, 450 to 3749 lb.; San Francisco, hot rolled sheets, 400 to 39,999 lb., galvanized and cold rolled sheets, 750 to 4999 lb., cold fin. bars, 0-299 lb.; hot rolled alloy bars, 0-4999 lb.; Seattle, cold finished bars, 1000 lb. and over, hot rolled alloy bars, 0-1999 lb.; Memphis, hot rolled sheets, 400 to 1999 lb., galvanized sheets, 150 and over; St. Paul, galvanized and cold rolled sheets, any quantity, hot rolled bars, plates, shanes, hot rolled sheets, 400 to 14,999 lb.; Los Angeles, hot rolled sheets, bars, plates, cold rolled sheets, 300 to 1999 lb.; galvanized sheets, 1 to 6 bundles; cold finished bars, 1 to 99 lb.; SAE bars, 100 lb. Extras for size, quality, etc., apply on above quotations. * 12 gage and heavier, \$3.43. † Los Angeles, San Francisco and Seattle prices reflect special provisions of amendment No. 2 to OPA Price Schedule No. 49.



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PRICES

BOILER TUBES

Seamless Steel and Lap Weld Commercial Boiler Tubes and Locomotive Tubes
Minimum Wall
(Net base prices per 100 ft., f.o.b. Pittsburgh, in carload lots)

			Seamless	Lap Weld,
			Cold	Hot
			Drawn	Rolled
2	in. o.d. 13 B.W.G.	15.03	13.04	12.38
2½	in. o.d. 12 B.W.G.	20.21	17.54	16.58
3	in. o.d. 12 B.W.G.	22.48	19.50	18.35
3½	in. o.d. 11 B.W.G.	28.37	24.62	23.15
4	in. o.d. 10 B.W.G.	35.20	30.54	28.66

(Extras for less carload quantities)

10,000 lb. or ft. over	Base
30,000 lb. or ft. to 39,999 lb. or ft.	5%
20,000 lb. or ft. to 29,999 lb. or ft.	10%
10,000 lb. or ft. to 19,999 lb. or ft.	20%
5,000 lb. or ft. to 9,999 lb. or ft.	30%
2,000 lb. or ft. to 4,999 lb. or ft.	45%
Under 2,000 lb. or ft.	65%

CAST IRON WATER PIPE

	Per Net Ton
6-in. and larger, del'd Chicago	\$54.80
6-in. and larger, del'd New York	52.20
6-in. and larger, Birmingham	46.00
6-in. and larger f.o.b. cars, San Francisco or Los Angeles	69.40
6-in. and larger f.o.b. cars, Seattle	71.20

Class "A" and gas pipe, \$3 extra; 4-in. pipe is \$3 a ton above 6-in. Prices shown are for lots of less than 200 tons. For 200 tons or over, 6-in. and larger is \$45 at Birmingham and \$53.80 delivered Chicago, \$59.40 at San Francisco and Los Angeles, and \$70.20 at Seattle.

RAILS, TRACK SUPPLIES

(F.o.b. Mill)

Standard rails, heavier than 60 lb., gross ton	\$40.00
Angle bars, 100 lb.	2.70
(F.o.b. Basing Points)	Per Gross Ton
Light rails (from billets)	\$40.00
Light rails (from rail steel)	39.00
	Base per lb.
Cut spikes	3.90c.
Screw spikes	5.15c.
Tie plates, steel	2.15c.
Tie plates, Pacific Coast	2.30c.
Track bolts	4.75c.
Track bolts, heat treated, to rail-roads	5.00c.
Track bolts, jobbers discount	63-5

Basing Points, light rails—Pittsburgh, Chicago, Birmingham; spikes and tie plates—Pittsburgh, Chicago, Portsmouth, Ohio, Weirton, W. Va., St. Louis, Kansas City, Minneapolis, Colo., Birmingham and Pacific Coast ports; tie plates alone—Steelton, Pa., Buffalo; spikes alone—Youngstown, Lebanon, Pa., Richmond

Lake Superior Ores (51.50% Fe.)

(Delivered Lower Lake Ports)

	Per Gross Ton
Old range, bessemer, 51.50	\$4.75
Old range, non-bessemer, 51.50	4.60
Mesaba, bessemer, 51.50	4.60
Mesaba, non-bessemer, 51.50	4.45
High phosphorus, 51.50	4.35

Foreign Ores*

(C.i.f. Philadelphia or Baltimore, Exclusive of Duty)

	Per Unit
African, 46-48 Mn	78c. to 80c.
Indian, 48-50 Mn	75c.

Furnace

	Per Net Ton
†Connellsville, prompt	\$6.00

Foundry

†Connellsville, prompt \$6.75 to \$7.00
*Maximum by-product coke prices established by OPA became effective Oct. 1, 1941. A complete schedule of the ceiling prices was published in THE IRON AGE, Sept. 25, p. 94B. Maximum beehive

Ferromanganese

F.o.b. New York, Philadelphia, Baltimore, Mobile or New Orleans, Domestic, 80%, per gross ton (carloads) \$135.00

Spiegeleisen

Per Gross Ton Furnace

Domestic, 19 to 21%	\$36.00
Domestic, 26 to 28%	49.50

Electric Ferrosilicon

(Per Gross Ton, Delivered Lump Size)

90% (carload lots, bulk)	\$74.50
90% (ton lots, packed)	87.00
75% (carload lots, bulk)	135.00
75% (ton lots, packed)	151.00

Silvery Iron

(Per Gross Ton, base 6.00 to 6.50 Si)

F.o.b. Jackson, Ohio	\$29.50*
Buffalo	30.75*
For each additional 0.50% silicon add \$1 a ton. For each 0.50% manganese over 1% add 50c. a ton. Add \$1 a ton for 0.75% phosphorus or over.	
*Official OPA price established June 24, 1941.	

Bessemer Ferrosilicon

Prices are \$1 a ton above Silvery Iron quotations of comparable analysis.

Ferrochrome

(Per Lb., Contained Cr, Delivered Carlots, Lump Size, on Contract)

4 to 6 carbon	13.00c.
2 carbon	19.50c.
1 carbon	20.50c.
0.10 carbon	22.50c.
0.06 carbon	23.00c.

Spot prices are ¼c. per lb. of contained chromium higher.

FERROALLOYS

Silico-Manganese

(Per Gross Ton, Delivered, Carloads, Bulk)

3 carbon	\$120.00
2.50 carbon	125.00
2 carbon	130.00
1 carbon	140.00

Other Ferroalloys

Ferrotungsten, per lb. contained W, del'd carload	\$2.00
Ferrotungsten, 100 lb. and less	2.25
Ferrovandium, contract, per lb. contained V, del'd	\$2.70 to \$2.90†
Ferrocolumbium, per lb. contained Cb, f.o.b. Niagara Falls, N. Y., ton lots	\$2.25†
Ferrocobaltititanium, 15-18 Ti, 7-8 C, f.o.b. furnace, carload contract, net ton	\$142.50
Ferrocobaltititanium, 17-20 Ti, 3-5 C, f.o.b. furnace, carload contract, net ton	\$157.50
Ferrophosphorus, electric or blast furnace materials, carloads, f.o.b. Anniston, Ala., for 18%, with \$3 unitage freight, equaled with Rockdale, Tenn., gross ton	\$58.50
Ferrophosphorus, electrolytic 23-26%, carlots, f.o.b. Monsanto (Siglo), Tenn., \$3 unitage, freight equalized with Nashville, gross ton	\$75.00
Ferromolybdenum, per lb., Mo, f.o.b. furnace	95c.
Calcium molybdate, per lb. Mo, f.o.b. furnace	80c.
Molybdenum oxide briquettes 48-52 Mo, per lb. contained Mo, f.o.b. Langeloth, Pa.	80c.
Molybdenum oxide, in cans, per lb. contained Mo, f.o.b. Langeloth, and Washington, Pa.	80c.

*Spot prices are \$5 per ton higher.

†Spot prices are 10c. per lb. of contained element higher.

FLUORSPAR

Fire Clay Brick

Per Net Ton

Domestic washed gravel, 85-5 f.o.b. Kentucky and Illinois mines, all rail	\$25.00
Domestic, f.o.b. Ohio River landing barges	25.00
No. 2 lump, 85-5 f.o.b. Kentucky and Illinois mines	25.00
Foreign, 85% calcium fluoride, not over 5% Cl, c.i.f. Atlantic ports, duty paid	Nominal
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2½% silicon, f.o.b. Illinois and Kentucky mines	\$34.00
As above, in bags, f.o.b. same mines	36.40

ORES

Brazilian, 46-48 Mn	81c. to 83c.
Cuban, 51 Mn	85c.

Per Short Ton Unit

Tungsten, Chinese, Wolframite, duty paid, delivered	\$24 to \$26
Tungsten, domestic scheelite, at mine	\$24 to \$25
Chrome ore, lump, c.i.f. Atlantic Seaboard, per gross ton; South African (low grade)	\$28 to \$30
Rhodesian, 45	Nom.
Rhodesian, 48	Nom.

*Importations no longer readily available. Prices shown are nominal.

COKE*

furnace coke prices established by OPA, Jan. 26. †F.O.B. oven.

By-product, Chicago	\$12.25
By-product, New England	\$13.75
By-product, Newark	\$12.40 to \$12.95
By-product, Philadelphia	\$12.38
By-product, Cleveland	\$12.30
By-product, Cincinnati	\$11.75
By-product, Birmingham	\$8.50†
By-product, St. Louis	\$12.02
By-product, Buffalo	\$12.50

REFRACTORIES

(F.o.b. Works)

Fire Clay Brick

Per 1000

Super-duty brick, St. Louis	\$64.60
First quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	51.30
First quality, New Jersey	56.00
Second quality, Pennsylvania, Maryland, Kentucky, Missouri and Illinois	46.55
Second quality, New Jersey	51.00
No. 1, Ohio	43.00
Ground fire clay, net ton	7.60

Silica Brick

Pennsylvania	\$51.30
Chicago District	58.90
Birmingham	51.30
Silica cement, net ton (Eastern)	9.00

Chrome Brick

Per Net Ton

Standard, f.o.b. Baltimore, Plymouth Meeting and Chester	\$54.00
Chemically bonded, f.o.b. Baltimore, Plymouth Meeting and Chester Pa.	54.00

Magnesite Brick

Standard f.o.b. Baltimore and Chester	\$76.00
Chemically bonded, f.o.b. Baltimore	65.00

Grain Magnesite

Domestic, f.o.b. Baltimore and Chester in sacks (carloads)	\$44.00
Domestic, f.o.b. Chewelah, Wash. (in bulk)	22.00

FUEL OIL

No. 6 Bur. Std., del'd Chicago	4.75c.
No. 3 distillate del'd Cleveland	6.50c.
No. 4 indus., del'd Cleveland	6.00c.
No. 5 indus., del'd Cleveland	5.25c.
No. 6 indus., del'd Cleveland	5.25c.